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ABSTRACT

This report provides descriptive data on allocated time in reading and mathematics for grades two and five as reported by a sample of California teachers participating in one phase of the Beginning Teacher Evaluation Study. The procedures used by teachers to record information are described and data are presented for the A-B period, October to December. Class means are provided on the amount of time accumulated over the A-B period in specific content categories. Daily means and the mean percent of total time allocated to specific content areas are also presented along with teacher estimates of task difficulty. (Author/JD)

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BTES

BEGINNING TEACHER EVALUATION STUDY

Technical Note Series

Technical Note IV-2a

DESCRIPTIONS OF ALLOCATED TIME TO CONTENT AREAS FOR THE A-B PERIOD

Marilyn Dishaw

July, 1977

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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This report provides descriptive data on allocated time in reading and mathematics for grades 2 and 5 as reported by a sample of California teachers participating in one Phase of the Beginning Teacher Evaluation Study. The procedures used by teachers to record information are described and data are presented for the A-B period, October to December. Class means are provided on the amount of time accumulated over the A-B period in specific content categories. Daily means and the mean percent of total time allocated to specific content areas are also presented, along with teacher estimates of task difficulty. A companion report (Technical Note IV-2b, Descriptions of Allocated Time to Content Areas for the B-C Period, Marilyn Dishaw) presents comparable data for the school year from January to May (1976-77).

Technical Note IV-2a

DESCRIPTIONS OF ALLOCATED TIME TO CONTENT AREAS FOR THE A-B PERIOD

by

Marilyn Dishaw

July, 1977

PREFACE

The Far West Laboratory conducts research for the California Commission for Teacher Preparation and Licensing through funds provided by the National Institute of Education. The Commission has responsibility for certifying teachers and teacher training programs in the State of California. The research that the Commission sponsors is designed to help them understand what teacher behaviors or instructional activities are beneficial for students. With a reliable knowledge base in this area the Commission and the institutions that train teachers would be better able to provide training experiences based on empirical findings relating teacher behavior to student achievement.

In previous years, under the Commission's sponsorship, the Beginning Teacher Evaluation Study has conducted empirical research on teaching which has led to the development of a "model" of elementary school classroom instruction. The central construct of the model is academic learning time which is defined as the time a student spends engaged in tasks of intermediate difficulty that are relevant to a defined content area. Briefly, the model states that student achievement in a particular content area is a function of student academic learning which is, in turn, a function of teacher behaviors and student entering characteristics. In this model, teacher behaviors are conceptualized in five functionally interrelated categories: diagnosis, prescription, presentation, monitoring, and feedback.

Phase IIIB of the BTES includes a large field study of this model applied to instruction and learning of reading and mathematics at grades 2 and 5. Data were collected during the 1976-77 academic year. Three major testing occasions were held in October, December, and May with a follow up session scheduled for September, 1977. These testing occasions are referred

to as occasions A, B, C, and D and serve to delimit major segments of the complete data set. Analyses will be reported for the A-B, B-C, and A-B-C-D periods. Within these periods, analyses will be carried out on the relationships between achievement and academic learning time and between academic learning time and teaching behaviors.

The allocation of time by teachers to various areas of reading and mathematics is an important element in the model. Allocated time, after adjustment for engagement, will be used as one estimate of academic learning time. Information on allocated time was collected via teacher logs. The Laboratory team that collected and processed these data was ably headed by Marilyn Dishaw. This technical note provides descriptive information on the allocation of instructional time within and across classes for the A-B period. Analogous information for the B-C period will be presented in Technical Note IV-2b.

These notes and others in the Phase III-B series are intended to present information on major data sources at several points in the analysis process. Subsequent notes will provide descriptive information on other data sources and report on relational analyses between elements of the model.

The log data represent a remarkable amount of work, especially on the part of teachers. Our thanks and appreciation go to each of them for this effort which is above and beyond their regular classroom responsibilities. The voluntary participation of many teachers and students in California schools makes this research possible.

Charles W. Fisher
Principal Investigator
Beginning Teacher Evaluation Study
July, 1977

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Introduction

This report describes the distribution of allocated time by content areas in reading and mathematics at grades 2 and 5 as reported by teachers during Phase III-B of the Beginning Teacher Evaluation Study (BTES). This report will cover the distribution of time within and across classes for the A-B period only. The A-B period is defined as the intertest period between the "A" (October 1976) and "B" (December 1976) administrations of the BTES achievement tests. The distribution of time for the B-C period (January through April 1977) will be discussed in Technical Note IV-2b due in July, 1977.

Although the data are being presented separately for the two intertest periods the processes of implementation, collection, and quality control span both periods. These areas will be fully discussed in this report as they developed throughout the A-C period. Technical Note IV-2b will provide an addendum of descriptive data on B-C time distribution and information on the B-C sample group.

Instrumentation

Development. The form the teachers used to record allocated time in content areas was called a teacher log. The content areas listed on the logs were developed in conjunction with the achievement tests. As subtests within the achievement battery were determined for Phase III-B, instructional time categories were created which either matched or were considered contributory to the achievement content categories.

The format of the Phase III-B logs was based on our experience with the log forms used during the 1975-76 school year in Phase III-A. Technical Report III-6 (Filby & Dishaw, 1976) describes the logs and logging

procedures used during that time. Briefly, a detailed lesson plan log was used during the first part (A-B period) of that year. The lesson plan log recorded on a daily basis the content of instruction within a block of time, the setting in which the instruction occurred, and the materials that were used. During the B-C period a checklist log form was used. Time allocations were reported on a weekly basis and information on setting and materials was no longer required. The weekly time allocations were reported in terms of time segments rather than in actual minutes. That is, codes of L, M, and H were used to reflect segments of 11-30 minutes, 31-90 minutes, and over 90 minutes respectively. Both the A-B and B-C logs reported instructional time for the class as a whole or for groups within the class. Thus much of the variation across students was lost.

By the end of the 1975-76 A-C logging period we concluded that the time estimates were more accurate when reported on a daily basis as during the A-B period but that the lesson plan log with its degree of detail was too impractical. The checklist log was concise and more appropriately limited to time in content. Therefore, we combined the checklist format with the reporting of time in minutes per day to arrive at the basic log form for Phase III-B. Copies of these Phase III-B logs and their accompanying glossaries defining content categories can be found in Appendix A.

Description of Logs. There were four logs, two at each grade level; one for mathematics and the other for reading. Logs contained a column listing the specific content categories for that quadrant and six parallel columns to record time and difficulty per student per content category. Time in specific categories was summed by student and entered in the total time space at the bottom of the column. On each log, space was provided for the teacher's name, date, and a check box identifying whether or not that day coincided with an

observation day. A key to the codes used to report content by student difficulty was also included on the log forms. A content variable number immediately follows each content title. The other code numbers refer to the keypunch column for student data.

During the A-B period, teachers were required to write their names and student names on each of the daily reading and mathematics logs. This tedious task was eliminated at the beginning of the B-C period when logs were printed with the teacher and student names.

Recording Procedure. Teachers completed the log forms at the end of the school day. They recorded both reading and mathematics instruction for their six selected target students. Under the column for a particular student the teacher recorded her estimate of the amount of time in minutes that that student had spent in each of the content categories that day. Next to the entry space for time there was a space for difficulty. By leaving that space blank the teacher indicated that the work in that content for that student was of medium difficulty. By using the E or H codes teachers could indicate that the lesson was easy or hard respectively. An (E) or (H) was used to indicate that part of the time in that content was easy or hard. Summing the time in each student's column provided a total time entry for each student. This total was a reference point for teachers in determining if they had recorded a reasonable amount of total time for mathematics and reading.

If a student was absent an (A) was entered in the total time space for that student. If no instruction in mathematics or reading occurred a log form was still submitted with a short explanation of why there was no instructional time recorded. An explanatory note was also required when time was recorded under the various "Other" content categories. For example, in grade 5 mathematics, time in Other Computation might be footnoted as "Decimals."

The logs were collected by the fieldworkers on the day of observation. Since observation occurred on the average of once a week, the teacher would usually have a week's worth of logs to submit at any one time.

Sample

Teachers. After the selection test (Cahen, 1977) thirty second grade teachers representing 28 classes were invited to be study participants and attended the log training sessions. During training they received their list of selected "target" students and discussed any problems concerning the selection with the staff. The training sessions were intensive and provided a thorough delineation of what their participation entailed. For some teachers this presented a second decision point. Three of the second grade teachers dropped out after training (but prior to "A" testing) stating they could not commit the time and energy required. The remaining 27 teachers representing 25 classes were a stalwart group and continued with us throughout the A-B and B-C logging periods.

Thirty-nine fifth grade teachers representing 30 classes attended teacher log training. Due to a very tight schedule our selection process for fifth grade was not fully completed until the first day of fifth grade training. Consequently seven teachers were deselected during training either for not having enough students within the selection band or because not all of the teachers involved in the student's instruction were willing to participate in the study. Two more teachers withdrew from the study after training but before the "A" testing. This left 30 teachers representing 22 fifth grade classrooms. All but one of these classes remained in the study throughout the A-C logging period.

Students. The A-B period began with 150 second grade and 134 fifth grade

students. By the end of the A-B period the second grade sample equaled 146 students with four students having moved to other schools during that time. The number of fifth grade students decreased from the initial 134 to 127 by the end of the A-B period. Six of these seven students came from the same class for which logs were not being submitted and the class had to be dropped.

Teacher Log Training

Prior to training each teacher received a notebook containing log procedural material, sample instructional days, log forms, and glossaries of content categories. Teachers were asked to review the material and try a few days of log keeping prior to their training session.

Training was held in mid-October at the Far West Laboratory and was conducted by the two staff members most familiar with the reading and mathematics content categories and development of logging procedures. Teachers were required to attend one of the two sessions offered at each grade level. If they attended a Friday session BTES paid for their classroom substitute. Participants at the Saturday sessions received a thirty dollar honorarium. Training days were divided into two sessions with the morning being allocated to general logging procedures and mathematics content. Reading content and individual conferences occupied the afternoon.

Content glossaries were reviewed thoroughly in conjunction with a packet of example material. Content coding examples were drawn from the textbooks that were the most widely used by the teachers. Teachers frequently asked specific questions and generated many examples based on their own curriculum programs. Example lessons were then generated by both the staff and teachers which included student difficulty, student time variations, as well as content combinations. Teachers completed logs based on these lesson narrations and

then discussed coding differences. Finally test packets, requiring the coding of content exampies, were completed individually by each teacher. Glossaries and notes were used as references in completing these packets. The staff then reviewed the packets in individual conferences providing feedback on their coding. The packets were collected by the staff.

Implementation

The basic system for collecting and processing logs required the teacher to complete logs on a daily basis and the field worker to collect them on a weekly basis returning them to the Far West Laboratory for processing.

Field Procedures. In addition to collecting the logs, the fieldworkers were responsible for helping the teachers with any logging problems. Fieldworkers had received similar but more extensive training than the teachers on log content and procedures. Thus they were able to answer many of the teacher questions at the time of their weekly visit. Problems at the beginning of the year were evident in two areas: a) content coding and b) obtaining estimates on student time. Within the first two weeks certain classrooms were identified that needed additional help in setting up classroom procedures for obtaining time estimates. Two fieldworkers were reassigned as consultants and worked with these classrooms until a structure was developed that was mutually satisfactory to both the teacher and BTES staff. Problems obtaining time estimates arose primarily in "open" classrooms with individualized programs that did not have a system for keeping track of what each student did each day. Organizational suggestions were offered to the teachers and sometimes materials, such as learning center check-in sheets, were developed. In some cases instructional materials and tasks were coded for content in order to balance a teacher's workload and allow her to concentrate more time on logging procedures.

For teachers who were having difficulty or expressing frustration over their ability to code the material correctly, we began to code some of the mathematics and reading workbooks. As a coding key was developed for one teacher, copies were made available to the other teachers using that same workbook.

Every possible effort was made during the first three to four weeks to help those teachers who were having difficulty. The comments of the teachers who withdrew from the study immediately after training provided a strong reminder to us that we were expecting a great deal of work from the teachers and that the first few weeks were crucial in stabilizing our sample group.

Log Processing Procedures. Once the logs were collected by the fieldworker they were returned to the Far West Laboratory and filed in the teacher log books. Each log book contained the logs from all the teachers who were contributing to the reading and/or mathematics instruction for one group (class) of students. The dates of the collected logs were checked off on the teacher's log book calendar. Observation days and school holidays were also noted on this calendar. The calendar was used by both the staff and fieldworkers to identify any missing data.

At the end of the A-B period each fieldworker was assigned as the primary worker for some of the teachers that they had been working with. As the primary worker they were responsible for the clerical preparation and quality control of the logs from those teachers. Since there were usually two workers involved with each teacher, designating one as the primary worker clarified responsibilities and equalized the distribution of clerical and quality control tasks.

Clerical Preparation. The primary worker reviewed the logs to verify that all sections to be completed by the teacher were correctly filled in

and that a log for each weekday was present. If there were any missing logs the worker contacted the teacher to obtain them if possible. Codes were entered on the logs to indicate student holidays, "non-instructional" days, and missing data days. Teacher and student ID numbers were also entered by the worker. However, the task of entering student ID numbers was eliminated with the reprinting of logs containing student numbers at the beginning of the B-C period. For classes that had more than one teacher involved in reading instruction, an additional code was entered to identify the teacher and provide a method by which data could be compiled separately by teacher.

Quality control. Using their knowledge of the classroom, primary workers reviewed the logs to determine if they were a reasonable reflection of "classroom reality." Particular attention was given to content categories that may have been confusing to the teacher. Notes written on the logs were evaluated to verify correct content categorizations. Obvious corrections could be made by the worker. Problems that appeared to form a pattern were discussed with the staff and teachers prior to any changes being made on the logs.

As we began the B-C period a log conference was held with each teacher at the end of an observation day. A log for that day's instruction was written jointly by the teacher and fieldworker. This conference provided a procedural evaluation of that teacher's log keeping strategy. For teachers who evidenced good log keeping procedures the conference provided them with positive feedback that they were doing a good job and to please continue. In some cases we were able to identify and correct some "bad habits" that had somehow escaped our attention during the A-B period. With this information the fieldworkers could decide which, if any, of their primary teachers needed help or closer attention.

Simple content checklists were completed by fieldworkers on observation

days to help the worker evaluate the logs when they were received the following week. These lists were brief reminders and identified gross discrepancies on the logs.

Frequent dialogues were also generated between staff and fieldworkers. All logs were regularly reviewed by the staff in order to follow the developing instructional pattern(s) within a class and across classes. As the staff acquired an impression of different classes from the logs, these impressions would be shared with the fieldworkers to see if they were correct. Sharing impressions and opinions was a valuable way of keeping in touch with the teachers and students associated with the log data.

Processing. Once the logs were clerically complete and considered acceptable under quality control standards they were approved for processing. Logs were approved on a week by week basis and no logs could be processed without the worker's approval.

Logs were pulled (removed from the logbook) by the staff on a monthly basis, bundled, and sent to be keypunched. Once the logs were keypunched and verified a file printout of data by student by day by quadrant was generated. Data for every student were then checked by hand to verify that there were entries for each day of the log period. Discrepancies were corrected by checking the original logs and identifying the source of error. Observation day codes were also checked by day by student. A spot check comparing one student's actual log data to the data printout was then conducted for a minimum of five classes per quadrant. Particular attention was given to student ID numbers to make sure they had not been transposed. Classes which involved more than one teacher were checked to verify that their codes had not been transposed. Due to the clerical preparation on the logs prior to keypunch, the error rate was reassuringly low. When errors were

found they usually affected only a few days of instruction. After completing this "cleaning" process data files were corrected and statistical summaries were generated.

A-B Results

The first section presents data for individual students on allocation of time within classes. The three remaining sections present data aggregated to the class level. These sections cover total time over the A-B period, average daily time, and proportion of total time allocated to specific content categories. Within each section information for reading and mathematics at grades 2 and 5 is presented.

Allocation of Time Within Class. The first set of descriptive data to be generated was aggregated time with difficulty coefficients and day tallies by student by class. That is, all the information obtained from the teacher logs was summed over the A-B period for each student. This represents our basic data set of allocated time at the student level. It is not possible in this technical note to include student data for each class and quadrant, but Tables 1 through 10 provide the data for two student groups (classes) per quadrant. Classes were selected to reflect the range of pupil time in content and also variance in day tallies and difficulty coefficients.

Table 1 contains the mathematics data gathered for the six second grade students who were followed in Class 9. The seven columns following the student ID numbers provide the day tallies or types of data days reported for these students. There were 30 weekdays in the A-B period for this class and for the majority of our classes. Of those 30 days, six were holidays leaving 24 school days. The number of school days identifies the number of potential instructional days for that student. However, potentials are not

always realized and there were three types of "non-data days" that were considered as important sources of student and teacher variance. The most obvious reason for no data is absenteeism and the column immediately following the number of school days states the number of days the student was absent. There were also days for which no log was received from the teacher. Such a day was categorized as a missing data day if we had reason to believe that instruction did occur and that the student was present. There were no missing data days for Class 9 as is shown under column 6 in Table 1. Finally, there were days during which the student was present but did not receive any instruction in mathematics (and/or reading). This would be a day for which we received a log stating: "Field Trip - No Math Today." The column labeled No Instruction provides the number of days that this occurred. Field trips, assemblies, Halloween parties, art projects, etc. sometimes precluded the teaching of mathematics and the frequency of non-instructional days varied by teacher, sometimes by student, and definitely by quadrant. Unless there was a full day field trip it was unlikely that a student would have a school day without some reading instruction. Mathematics, being usually taught in a single block of time, could be more easily dropped in favor of a special project. Omitting mathematics was usually the decision of the teacher and occurred more frequently at second than at fifth grade. If there was variation among students, it was more likely to occur in a classroom with an individualized curriculum program. Class 15 (Table 2) is an example of student variance within an individualized program.

The difference between the number of school days and the number of "non-data days" yields the number of data days (column 8, Table 1). This is the actual number of instructional days in the A-B period that we received a record of and should be referred to when interpreting the amount of time

Table 1

A-B Aggregated Data
Day Tallie, Time in Content, and Difficulty Percentages

Class 9 Grade 2 Mathematics

	DAY TALLIES							TIME IN CONTENT														DIFFICULTY				
Student	Days in A-B	Holidays	School Days	Days Absent	Missing Data Days	No Instruction	Data Days	Add/Subt. No Regroup Short Form	Add/Subt. No Regroup Instruct. Algorithm	Add/Subt. with Regroup Short Form	Add/Subt. with Regroup Instruct. Algorithm	Speed Tests	Other Computation	Computational Transfer	Place Value/Numerals	Word Problems	Money	Linear Measurement	Fractions	Developmental Activities	Other Concepts	Total Time	Percent Easy	Percent Partially Easy	Percent Hard	Percent Partially Hard	Percent Medium
01	30	6	24	0	0	1	23	635	0	0	0	10	0	194	0	45	0	10	0	0	60	954	0	0	8	0	92
02	30	6	24	0	0	1	23	230	0	0	0	10	0	223	179	0	88	10	0	0	213	953	0	0	0	0	100
03	30	6	24	0	0	1	23	478	0	0	0	10	0	74	187	17	11	10	0	40	118	945	0	0	0	0	100
04	30	6	24	2	0	1	21	272	0	0	0	10	0	139	320	73	28	0	0	0	25	867	0	0	0	0	100
05	30	6	24	1	0	1	22	359	0	0	0	10	0	181	207	56	15	10	0	0	74	912	0	0	0	0	100
06	30	6	24	0	0	1	23	264	0	0	0	10	0	363	131	5	55	10	0	0	122	960	0	0	0	0	100

Table 2

A-B Aggregated Data
Day Tallies, Time in Content, and Difficulty Percentages

Class 15 Grade 2 Mathematics

Student	DAY TALLIES							TIME IN CONTENT														DIFFICULTY				
	Days in A-B	Holidays	School Days	Days Absent	Missing Data Days	No Instruction	Data Days	Add/Subt. No Regroup Short Form	Add/Subt. No Regroup Instruct. Algorithm	Add/Subt. with Regroup Short Form	Add/Subt. with Regroup Instruct. Algorithm	Speed Tests	Other Computation	Computational Transfer	Place Value/Numerals	Word Problems	Money	Linear Measurement	Fractions	Developmental Activities	Other Concepts	Total Time	Percent Easy	Percent Partially Easy	Percent Hard	Percent Partially Hard	Percent Medium
01	30	3	27	0	1	1	25	240	40	210	80	30	0	570	55	0	0	0	0	0	10	1235	6	0	23	13	57
02	30	3	27	0	1	1	25	220	65	150	480	30	0	280	0	0	0	0	0	0	10	1235	5	0	11	8	77
03	30	3	27	0	1	4	22	155	160	0	305	0	155	260	20	0	0	0	0	0	0	1055	0	31	0	0	69
04	30	3	27	0	1	1	25	220	80	0	135	30	60	680	25	0	0	0	0	0	10	1240	5	0	16	11	68
05	30	3	27	4	1	2	20	175	50	0	240	0	210	90	105	0	0	0	0	65	0	935	0	5	0	0	95
06	30	3	27	0	1	1	25	220	40	60	200	30	0	660	20	0	0	0	0	0	10	1240	5	0	27	11	56

Table 3
A-B Aggregated Log Data
Day Tallies, Time in Content, and Difficulty Percentages
Class 5 Grade 2 Reading

		STUDENT					
		01	02	03	04	05	06
TIME IN CONTENT	Single Consonants	0	17	1	0	0	17
	Consonant blends and digraphs	38	67	67	56	63	57
	Variant consonants (c or g)	65	52	87	97	85	47
	Short vowels	175	212	219	212	166	235
	Long vowels	396	402	379	376	350	458
	Other decoding	176	201	194	184	159	159
	Compound words	10	20	24	23	25	0
	Root words and affixes	8	18	15	10	17	0
	Syllables	0	0	0	0	0	0
	Synonyms	0	10	10	10	10	0
	Pronoun reference	0	0	0	0	0	0
	Other word meaning	130	81	132	116	133	89
	Understanding events	38	43	62	55	74	56
	Understanding relationships	23	13	23	22	27	0
	Identifying main ideas	8	0	9	7	9	0
	Other Comprehension	19	10	7	8	7	0
	Sight words (reading single words	92	94	75	98	97	99
	Oral reading of text	187	126	180	208	202	111
	Silent reading of text	66	35	58	61	62	28
	Reading in content areas	13	8	10	13	13	8
	Listening while reading	0	0	0	0	0	0
	Spelling (no specific decoding focus)	29	39	19	34	19	39
	Grammar	10	0	3	13	15	0
	Creative writing	5	6	7	5	7	7
	Study skills	20	22	24	20	24	24
	Other (copying, developmental)	270	240	235	225	245	280
	Total Time	1778	1716	1840	1853	1809	1714

		STUDENT					
		01	02	03	04	05	06
DAY TALLIES	Days in A-B	30	30	30	30	30	30
	Holidays	6	6	6	6	6	6
	School Days	24	24	24	24	24	24
	Days Absent	3	2	0	0	2	3
	Missing Data	0	0	0	0	0	0
	No Instruction	0	0	0	0	0	0
	Data Days	21	22	24	24	22	21
DIFFICULTY	Percent Easy	0	0	0	0	0	0
	Percent Partially Easy	0	0	0	0	0	0
	Percent Hard	0	0	0	0	0	0
	Percent Partially Hard	0	0	0	0	0	0
	Percent Medium	100	100	100	100	100	100

Table 4
A-B Aggregated Log Data
Day Tallies, Time in Content, and Difficulty Percentages
Class 3 Grade 2 Reading

		STUDENT					
		01	02	03	04	05	06
TIME IN CONTENT	Single Consonants	107	190	220	185	210	265
	Consonant blends and digraphs	60	53	35	35	30	40
	Variant consonants (c or g)	0	0	0	0	0	0
	Short vowels	80	230	230	170	155	205
	Long vowels	68	32	47	87	112	30
	Other decoding	0	40	0	0	0	30
	Compound words	5	5	20	10	15	5
	Root words and affixes	47	70	34	47	47	40
	Syllables	7	0	12	0	7	0
	Synonyms	0	0	0	0	0	0
	Pronoun reference	0	7	5	0	0	10
	Other word meaning	25	20	25	25	25	15
	Understanding events	70	10	35	37	42	10
	Understanding relationships	125	138	115	217	133	80
	Identifying main ideas	120	0	20	15	23	0
	Other Comprehension	0	97	40	90	40	97
	Sight words (reading single words	67	115	107	65	57	85
	Oral reading of text	120	200	118	120	122	175
	Silent reading of text	162	260	165	177	220	225
	Reading in content areas	10	10	10	10	10	10
	Listening while reading	10	22	0	0	0	12
	Spelling (no specific decoding focus)	35	25	20	27	40	25
	Grammar	55	82	50	65	65	97
	Creative writing	230	330	300	345	260	315
	Study skills	10	25	25	15	50	25
	Other (copying, developmental)	247	290	262	280	237	240
	Total Time	1660	2251	1895	2022	1900	2036

		STUDENT					
		01	02	03	04	05	06
DAY TALLIES	Days in A-B	30	30	30	29	30	29
	Holidays	6	6	6	6	6	6
	School Days	24	24	24	23	24	23
	Days Absent	4	0	0	1	0	0
	Missing Data	0	0	0	0	0	0
	No Instruction	1	2	2	1	1	2
	Data Days	19	22	22	21	23	21
DIFFICULTY	Percent Easy	1	0	0	0	1	0
	Percent Partially Easy	0	0	0	0	0	0
	Percent Hard	11	30	23	18	11	21
	Percent Partially Hard	0	2	1	0	1	0
	Percent Medium	88	67	76	82	88	79

Table 5
A-B Aggregated Log Data
Day Tallies, Time in Content, and Difficulty Percentages
for Class 12 in Grade 5 Mathematics

	DAY TALLIES							TIME IN CONTENT																DIFFICULTY				
Student	Days in A-B	Holidays	School Days	Days Absent	Missing Data Days	No Instruction	Data Days	Addition	Subtraction	Multiplication: Basic Facts	Speed Tests	Algorithm	Division	Fractions	Other Computation	Computational Transfer	Numerals/Place Value (Whole No.)	Word Problems	Geometry: Perimeter	Area	Number Pairs	Lines or Figures	Other Concepts	Total Time	Percent Easy	Percent Partially Easy	Percent Hard	Percent Partially Hard	Percent Medium
01	30	4	26	1	3	6	16	0	0	0	7	0	19	562	0	10	0	0	0	0	0	0	12	610	0	0	0	0	100
02	30	4	26	0	3	6	17	0	0	0	9	0	20	634	0	16	0	0	0	0	0	0	12	691	0	0	2	7	91
03	30	4	26	0	3	7	16	0	0	0	5	0	20	555	0	10	0	0	0	0	0	0	40	630	0	0	0	13	87
04	30	4	26	0	3	7	16	0	0	0	7	0	15	619	0	10	0	0	0	0	0	0	35	686	0	0	0	7	93
05	30	4	26	3	3	7	13	0	0	0	4	0	8	416	0	40	0	0	0	0	0	0	20	488	0	0	0	9	91
06	30	4	26	0	3	7	16	0	0	0	9	0	25	670	0	14	0	0	0	0	0	0	20	738	0	0	0	0	100

Table 6
A-B Aggregated Log Data
Day Tallies, Time in Content, and Difficulty Percentages
for Class 17 in Grade 5 Mathematics

	DAY TALLIES							TIME IN CONTENT															DIFFICULTY				
Student	Days in A-B	Holidays	School Days	Days Absent	Missing Data Days	No Instruction	Data Days	Addition	Subtraction	Multiplication: Basic Facts	Speed Tests	Algorithm	Division	Fractions	Other Computation	Computational Transfer	Numerals/Place Value (Whole No.)	Word Problems	Geometry: Perimeter	Area	Number Pairs	Lines or Figures	Other Concepts	Total Time	Percent Easy	Percent Partially Easy	Percent Hard	Percent Partially Hard	Percent Medium
01	30	4	26	0	1	0	25	15	15	10	0	630	115	0	0	20	0	185	0	0	0	0	0	990	3	0	0	0	97
02	30	4	26	1	1	0	24	30	100	135	25	460	35	0	0	200	10	0	0	0	0	0	0	995	0	2	10	0	88
03	30	4	26	0	1	0	25	45	100	125	25	345	130	0	0	160	5	50	0	0	0	0	0	985	26	0	0	0	74
04	30	4	26	3	1	0	22	15	20	10	0	770	55	0	0	30	0	45	0	0	0	0	0	945	4	0	0	5	91
05	30	4	26	3	1	0	22	40	105	50	15	445	40	0	0	190	10	0	0	0	0	0	0	895	2	0	0	0	98
06	30	4	26	0	1	0	25	520	480	10	0	290	400	120	0	20	10	25	0	0	0	0	0	1875	53	0	0	0	47

Table 7
A-B Aggregated Log Data
Day Tallies, Time in Content, and Difficulty Percentages
Class 5 Grade Reading

		STUDENT					
		01	02	03	04	05	06
TIME IN CONTENT	Root words and affixes	55	100	45	100	0	45
	Syllables	145	115	145	130	60	145
	Synonyms	155	120	155	120	105	155
	Pronoun reference	25	25	25	25	10	25
	Other word meaning	210	200	205	215	125	210
	Verbatim (no rephrasing)	20	20	20	35	0	20
	Translation (paraphrase)	30	50	30	50	30	30
	Inference/Synthesis	20	20	20	20	0	20
	Identifying main ideas	45	80	45	65	20	45
	Evaluation of fact and opinion	0	10	0	10	0	0
	Other comprehension	50	90	50	90	50	50
	Oral reading	150	90	150	95	70	150
	Silent reading	475	430	475	470	250	475
	Reading in content areas	120	95	120	120	75	120
	Spelling	165	145	165	165	105	165
	Grammar	225	195	220	220	125	220
	Creative writing	60	60	60	60	35	60
	Study skills	10	10	10	10	0	10
	Other	0	0	0	0	0	0
	Total Time	1960	1855	1940	2000	1060	1945

		STUDENT					
		01	02	03	04	05	06
DAY TALLIES	Days in A-B	30	30	30	30	16	30
	Holidays	3	3	3	3	2	3
	School Days	27	27	27	27	14	27
	Days Absent	0	2	0	0	0	0
	Missing Data	3	3	3	3	1	3
	No Instruction	0	0	0	0	0	0
	Data Days	24	22	24	24	13	24
DIFFICULTY	Percent Easy	2	4	2	6	0	3
	Percent Partially Easy	0	0	0	0	0	0
	Percent Hard	12	3	3	1	5	7
	Percent Partially Hard	0	0	0	0	0	0
	Percent Medium	86	93	95	93	95	90

Table 8
A-B Aggregated Log Data
Day Tallies, Time in Content, and Difficulty Percentages
Class 27, Teacher 1 Grade 5 Reading

		STUDENT					
		01	02	03	04	05	06
TIME IN CONTENT	Root words and affixes	0	0	5	0	5	0
	Syllables	0	0	0	0	0	0
	Synonyms	0	0	0	0	0	0
	Pronoun reference	0	0	0	0	0	0
	Other word meaning	90	90	90	90	90	90
	Verbatim (no rephrasing)	75	75	65	75	75	65
	Translation (paraphrase)	10	10	10	10	10	10
	Inference/Synthesis	35	35	30	35	35	30
	Identifying main ideas	0	0	0	0	0	0
	Evaluation of fact and opinion	0	0	0	0	0	0
	Other comprehension	210	210	180	210	210	190
	Oral reading	20	20	25	15	25	30
	Silent reading	235	205	195	220	215	190
	Reading in content areas	0	0	0	10	0	0
	Spelling	0	0	0	0	0	0
	Grammar	55	55	55	55	55	55
	Creative writing	0	0	0	0	0	0
	Study skills	10	10	10	10	10	5
	Other	0	0	0	0	0	0
	Total Time	740	710	665	730	730	665

		STUDENT					
		01	02	03	04	05	06
DAY TALLIES	Days in A-B	24	24	24	24	24	24
	Holidays	3	3	3	3	3	3
	School Days	21	21	21	21	21	21
	Days Absent	0	1	1	0	0	1
	Missing Data	0	0	0	0	0	0
	No Instruction	0	0	0	0	0	0
	Data Days	21	20	20	21	21	20
DIFFICULTY	Percent Easy	1	1	1	1	1	1
	Percent Partially Easy	0	0	0	0	0	0
	Percent Hard	13	13	15	13	13	14
	Percent Partially Hard	0	0	0	0	0	0
	Percent Medium	86	86	84	86	86	85

Table 9
A-B Aggregated Log Data
Day Tallies, Time in Content, and Difficulty Percentages
Class 27, Teacher 2 Grade 5 Reading

		STUDENT					
		01	02	03	04	05	06
TIME IN CONTENT	Root words and affixes	0	0	0	0	0	0
	Syllables	0	0	0	0	0	0
	Synonyms	0	0	0	0	0	0
	Pronoun reference	0	0	0	0	0	0
	Other word meaning	40	40	40	40	40	40
	Verbatim (no rephrasing)	0	0	0	0	0	0
	Translation (paraphrase)	20	20	20	20	20	20
	Inference/Synthesis	10	10	10	10	10	10
	Identifying main ideas	0	0	0	0	0	0
	Evaluation of fact and opinion	123	123	123	123	123	123
	Other comprehension	35	35	35	35	35	35
	Oral reading	375	375	375	375	375	375
	Silent reading	142	142	142	142	142	142
	Reading in content areas	75	75	75	75	75	105
	Spelling	50	50	50	50	50	50
	Grammar	0	0	0	0	0	0
	Creative writing	15	15	15	15	15	15
	Study skills	145	145	145	145	145	145
	Other	0	0	0	0	0	0
	Total Time	1030	1030	1030	1030	1030	1060

		STUDENT					
		01	02	03	04	05	06
DAY TALLIES	Days in A-B	24	24	24	24	24	24
	Holidays	3	3	3	3	3	3
	School Days	21	21	21	21	21	21
	Days Absent	0	0	0	0	0	0
	Missing Data	0	0	0	0	0	0
	No Instruction	3	3	3	3	3	2
	Data Days	18	18	18	18	18	19
DIFFICULTY	Percent Easy	20	20	20	20	20	19
	Percent Partially Easy	0	0	0	0	0	0
	Percent Hard	3	3	3	3	3	3
	Percent Partially Hard	0	0	0	0	0	0
	Percent Medium	77	77	77	77	77	78

Table 10
A-B Aggregated Log Data
Day Tallies, Time in Content, and Difficulty Percentages
Class 27, Teacher 3 Grade 5 Reading

		STUDENT					
		01	02	03	04	05	06
TIME IN CONTENT	Root words and affixes	55	45	53	53	56	55
	Syllables	0	0	0	0	0	0
	Synonyms	0	0	0	0	0	0
	Pronoun reference	45	30	45	39	47	45
	Other word meaning	0	0	0	0	0	0
	Verbatim (no rephrasing)	0	0	0	0	0	0
	Translation (paraphrase)	5	5	5	5	5	5
	Inference/Synthesis	0	0	0	0	0	0
	Identifying main ideas	0	0	0	0	0	0
	Evaluation of fact and opinion	0	0	0	0	0	0
	Other comprehension	15	15	15	15	15	15
	Oral reading	37	37	37	37	37	37
	Silent reading	38	37	38	32	39	40
	Reading in content areas	0	0	0	0	0	0
	Spelling	285	260	200	240	262	240
	Grammar	297	277	297	290	295	278
	Creative writing	10	0	0	30	30	60
	Study skills	0	0	0	0	0	0
	Other	0	0	0	0	0	0
	Total Time	787	706	690	741	786	775

		STUDENT					
		01	02	03	04	05	06
DAY TALLIES	Days in A-B	24	24	24	24	24	24
	Holidays	3	3	3	3	3	3
	School Days	21	21	21	21	21	21
	Days Absent	0	2	0	0	0	1
	Missing Data	0	0	0	0	0	0
	No Instruction	0	0	0	0	0	0
	Data Days	21	19	21	21	21	20
DIFFICULTY	Percent Easy	5	10	11	15	5	13
	Percent Partially Easy	10	13	14	15	9	15
	Percent Hard	0	0	0	0	3	3
	Percent Partially Hard	3	0	0	0	3	0
	Percent Medium	83	77	75	70	80	69

accumulated by the student in the content areas. That is, given 23 days of instruction in mathematics, how many minutes does that yield and how were those minutes distributed?

The next fourteen columns in Table 1 give the amount of time in minutes that each student spent in each of the specific mathematics content categories. The content titles are somewhat abbreviated from their listing on the logs but for all tables the content areas are reported in the same order as they are listed on the teacher logs (Appendix A). Summing the amount of time in each of the specific contents we arrive at the total time in minutes in mathematics for each student during the A-B period.

The final section of student data shown in Table 1 contains the coefficients of difficulty. As previously stated under logging procedures, teachers were requested to indicate if a lesson was easy or hard for a student by entering an E or an H by the time entry for that lesson's content. Although these indications of difficulty were recorded at the specific level we summed across specific content to get an estimate of difficulty for total time in mathematics (and reading). Therefore, the difficulty coefficients as shown in Table 1 represent the percentage of total time in mathematics that was considered by the teacher to be of medium (easy and hard) difficulty for that student.

Tables 2 through 10 present the same type of student data as explained here for Table 1. The grade 2 and 5 reading tables (3, 4, 7-10) are presented in a slightly different format due to space limitations. Tables 8 through 10 for Class 27 within the grade 5 reading quadrant report student data separately for each of the three teachers involved in the student's instructional program. Teacher 1 was the reading teacher, teacher 2 taught social studies, and teacher 3 taught English and spelling.

Allocation of Total A-B Time Across Classes. Class means were computed for time in each content category, day tallies, and difficulty coefficients. Tables 11 through 18 display these class means, rounded to the nearest whole number, by quadrant. Two Tables are presented for each quadrant. The first presents the data on allocated time and the second provides the day tallies and difficulty percentages for each class in that quadrant. The data can be interpreted in a straightforward manner for those classes which had only one teacher. Allocated time in content for those classes which had two or more reading teachers were computed by summing the time across all sources of instruction and then computing the average for each student and finally the class mean for those students.

These tables show how much time, on the average, a student in a particular class accumulated over the A-B period; how the time was distributed, and how it compares to that received by students in other classes. A wide range of times within specific content categories is desirable for future analysis of time and achievement. However, when interpreting these tables note that the number of data days are not equivalent across classes. The reasons for this variation are delineated in Tables 12, 14, 16, and 18.

Twenty-two of the twenty-five second grade classes had few, if any, missing data days in the mathematics quadrant (see Table 12). Classes 1 and 2, which missed 15 and 10 days respectively may be dropped from A-B analysis requiring allocated time data. The times for Class 24 (missing 6 days) will be carefully examined prior to inclusion in analyses. Consideration will be given to estimating the missing instruction for this class.

There is a minor variation in the number of days in the A-B period across classes. Four second grade classes had less than 30 days. In each of these classes the mean was lowered by the presence of one student who had a shorter A-B period due to a late "A" test date. Another source of variance is the

Table 11

Average Total Time In Minutes Per Pupil Per Class in Content Areas
for the A-B Period

Grade 2 Mathematics

CLASSES

	LOG CONTENT AREAS		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
COMPUTATION	Add/Subt No Regrouping Standard Short Form	1	76	145	195	208	209	263	155	576	373	250	476	208	168	134	205	610	256	302	685	725	219	248	363	101	344
	Add/Subt No Regrouping Instructional Algorithm	2		56	53	12	25			20				53	39	167	73						29				
	Add/Subt With Regrouping Standard Short Form	3						7							74		70					5	22				
	Add/Subt With Regrouping Instructional Algorithm	4						6	36						166		240			12			16				
	Speed Tests	5			5	24	56	16	18	23	10				40		20				8	81	1	34	14	25	
	Other Computation	6				102											71			5					50	57	
CONCEPTS/APPLICATION	Computational Transfer	7	82	68	160	128	140	18	193	187	196	229	82	238	40	185	423	40	249	303	17	9	88	176	207	133	116
	Place Value/Numerals	8	31	24	363	88	85	13	424	298	171	143	58	115	442	65	38	15	126	151	69	25	36	37	15	128	195
	Word Problems	9			8	8		85	3	203	33	60	67	78	3	152			80	93	18		78	249	88	7	20
	Money	10	14	40		11				80	33	41		15	94	45			55	63	19			13		46	88
	Linear Measurement	11	37	27	71	79	29			7	8	20	50	25	205				30	26	5			18	23		
	Fractions	12				7																				1	
	Developmental Activities	13	6	13	88	86		285			7	21		5		66	11			3	98	8	2	228	185	24	
	Other Concepts/ Application	14	7	103	76	47	145	10		20	102	158	43	46	40	8	7		133	62			36	43	155	55	260
	Total Time A-B		253	475	1020	802	686	696	829	1414	931	922	775	782	1310	822	1157	665	929	1020	918	854	526	1044	1099	576	1023
	Mean Number of Data Days		6	11	19	22	22	20	23	24	23	24	21	22	23	25	24	23	25	20	22	21	17	24	25	15	21
	Average Time Per Day		42	43	53	36	31	35	36	59	41	39	38	36	58	33	49	29	37	51	42	40	30	43	45	38	49

Table 12
Mean Day Tallies and Difficulty Percentages
Per Pupil Per Class for the A-B Period
in Grade 2 Mathematics

CLASSES	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Days in A-B	30	30	30	30	30	30	30	30	30	28	30	30	30	30	30	28	29	28	30	30	30	30	30	30	30
Holidays	4	6	6	6	6	6	4	3	6	3	4	4	5	3	3	3	4	6	4	4	4	5	5	4	3
Absentism	0	1	1	0	2	1	3	2	0	0	2	0	0	1	0	1	0	1	2	1	1	1	0	1	3
Missing Data	15	10	0	1	0	0	0	0	0	1	0	1	1	1	1	0	0	0	0	2	2	0	0	6	1
Non-Instructional	5	2	4	1	0	3	0	1	1	0	3	3	1	0	2	2	0	1	2	2	6	0	0	4	2
Data Days	6	11	19	22	22	20	23	24	23	24	21	22	23	25	24	23	25	20	22	21	17	24	25	15	21

Percent Easy	2	23	0	0	0	0	0	0	0	0	0	0	9	0	4	0	6	1	9	0	1	0	0	0	0
Percent Partially Easy	0	10	0	0	0	0	2	0	0	0	1	0	0	0	6	0	0	0	13	0	0	0	0	0	0
Percent Hard	2	11	23	0	0	0	0	1	1	0	3	1	6	2	13	0	0	4	0	1	0	3	0	3	0
Percent Partially Hard	3	12	3	0	0	3	6	2	0	0	3	1	1	13	7	0	3	0	1	1	7	0	1	0	0
Percent Medium	93	45	73	100	100	97	91	97	99	100	93	98	84	84	70	100	91	95	77	98	92	97	99	97	100

Table 13

Average Total Time In Minutes Per Pupil Per Class
In Content Areas for the A-B Period
Grade 2 Reading

CLASSES

	LOG CONTENT AREAS		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
DECODING	Single consonants	1	17	32	196	12	6	22	32	61	*	37	173	18	69	53	162	30	128	3		7	65	8	10	71	115
	Consonant blends & digraphs	2	15	37	42	28	58		80	63	101	24	130	71	42	145	50	3	230	46	10	35	303	40	38	3	70
	Variant consonants (c or g)	3		2		23	72		7	62				3	15	7	20		5	22	105		143	23	*		20
	Short vowels	4	25	16	178	16	203	274	100	77		73	145	89	73	214	105	48	208	52		234	101	24	49	61	79
	Long vowels	5	11	18	63	19	393	7	33	39	25	20	43	63	7	66	41	43	61	50		168	13		20	123	83
	Other decoding	6		43	12	9	179	6		149	357	6	41	23		57	7	20	24	56	165	19	28	233	275	105	65
WORD STRUCTURE	Compound words	7		22	10		17		61	52	20	2	14	26		38	3	2	10	17		21		13	14	6	35
	Root words and affixes	8	10	21	48		11		55	37	25	16	39	50	5	153	57	13	18	43	20			30		7	11
	Syllables	9		3	4				46	10	2	5	8	43		100	16	13	2	14							
WORD MEANING	Synonyms	10	1	5			7		3	10	10			8		43	17			27		40		2			23
	Pronoun reference	11			4				1	20	*		8	2		31			3	17	15						
	Other word meaning	12	83	8	23		114		148	37	223	18	172	43		23	58	62	88	113	239	29	7	25	3	27	165
COMPREHENSION	Understanding events	13	66	23	34	30	55	26	111	93	8	72	143	53	94	95	29	39	41	38	212	120	71	73	73	22	59
	Understanding relationships	14	15	12	135		18	70	5	105	8	38	134	2	5	61	54	11	32	12	53	*	29	19		6	90
	Identifying main ideas	15	13	1	30	1	6	55	16	17		210	5	27	11	60	18	47	6	65	53	3	21	17	16	7	39
	Other comprehension	16	43	27	61	28	9	5	176	23	62	49	18	3	20	69	200	19	83	65			58	34	23	81	125
READING PRACTICE	Sight words (reading single words)	17	67		83	80	93	176	59	60	3	204	158	116	159	193	428	59	139	13	107	173	7	16	44	45	240
	Oral reading of text	18	49	120	143	17	169	108	160	62	85	156	151	184	265	123	95	7	261	211	108	278	35	43	75	147	310
	Silent reading of text	19	155	110	202	10	52	114	77	53	56	450	239	40	154	140	92	129	139	104	285	240	70	448	309	29	30
	Reading in content areas	20	8		10		11	2	113	25	10	30	63	*	10	55	8	88	264			8	93			36	55
	Listening while reading	21		25	7	23		15	87	28	196	23	6		67	73	180			4	55	41	84	10	3	46	
READING RELATED	Spelling (no specific decoding focus)	22	101	158	29	10	30	25	125	202	49	222	218	109	155	127	100	108	288	53	28	240	7	7	3	130	226
	Grammar	23	10	145	69	51	7	28	26	70	30	2	177	120	57	241	24		250	20		*		7	81	70	
	Creative writing	24	138	103	297	167	6	316	303	103	143	98	181	37	278	53		297	38	125	89	119	88	179	126	58	188
	Study skills	25	76	7	25	5	22		38	62	*	27	76	12	80	257			150	150		47	26	118	125	130	170
	Other (copying, developmental)	26	229	179	259	222	249	1498	514	77	283	533	340	172	277	418		326	295	295	62	287	197	198	163	150	35
Total Time A-B			1133	1115	1961	751	1785	2475	2376	1593	1696	2314	2684	1314	1842	2891	1762	1363	2762	1612	1592	2110	1443	1565	1447	1358	2232
Mean Number of Data Days			11	13	21	22	22	22	23	24	21	24	24	23	22	24	22	26	25	19	24	23	25	23	23	20	23
Average Time Per Day			106	86	92	34	80	127	104	67	79	96	112	56	82	118	79	53	112	84	66	91	57	68	62	69	99

* = less than 1 minute

Table 14
Mean Day Tallies and Difficulty Percentages
Per Pupil Per Class for the A-B Period
in Grade 2 Reading

CLASSES	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	22	24	25
Days in A-B	30	30	30	30	30	29	30	30	30	30	30	30	30	30	30	28	29	28	30	30	30	30	30	30	30
Holidays	4	6	6	6	6	6	4	3	6	3	4	4	5	3	3	3	4	6	4	4	4	5	5	4	3
Absentism	0	1	1	1	2	1	3	2	1	1	2	1	1	2	1	0	0	1	2	0	1	1	1	1	4
Missing Data	15	10	0	1	0	0	0	1	2	1	0	1	2	1	1	0	0	0	0	2	0	1	0	5	1
Non-Instructional	0	0	2	0	0	0	0	0	0	0	0	1	0	0	3	0	0	2	0	1	0	0	1	0	0
Data Days	11	13	21	22	22	22	23	24	21	24	24	23	22	24	22	26	25	19	24	23	25	23	23	20	23

Percent Easy	9	0	0	0	0	0	0	0	0	0	1	0	4	2	2	0	1	0	5	0	0	0	0	0	0
Percent Partially Easy	0	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	1	0	16	0	0	0	0	0	0
Percent Hard	2	0	19	0	0	0	0	0	0	0	2	1	0	2	3	0	1	1	0	1	1	1	0	0	3
Percent Partially Hard	1	9	1	0	0	2	2	2	0	0	1	5	1	3	6	0	3	0	0	2	0	0	4	0	1
Percent Medium	88	89	80	100	100	98	98	98	100	100	96	95	95	93	89	100	95	99	79	96	98	99	96	100	96

Table 15

Average Total Time In Minutes Per Pupil Per Class
In Content Areas for the A-B Period In

Grade 5 - Mathematics

		CLASSES																				
	LOG CONTENT AREAS	01	03	04	05	06	08	09	10	11	12	14	16	17	18	19	21	23	24	25	26	27
COMPUTATION	Addition 1	19	13	79			208	126	108			10	15	111	5	41	150	14	13	25		43
	Subtraction 2	19	49	121			261	192	66			46	143	137		183	100	14		31		22
	Multiplication: Basic Facts 3	45	3	21		10	15					78	194	57	73	47	39				6	
	Speed Tests 4	36	30	2	98	55				10	7		73	11		10	31	30		19	61	
	Algorithm 5	310	117	17	42	10	310	41	551			367	245	490	208	387	119	156		212	65	50
	Division 6	96	10		128	175	423			22	18	308		129	925	13	128	595		263	214	109
	Fractions 7				349	809				595	576			20					543	119	77	170
	Other 8			36		153											58	16	20	83	3	10
CONCEPTS/APPLICATION	Computational Transfer 9		49		507	32		59	15	11	17	128	169	103	137	51	58	29	109	26	7	45
	Numerals/Place Value (whole numbers) 10			53		13		19				29		6		25	110	35	5	40		20
	Word Problems 11		58	3	33	5	82	75	64			28	37	51	12	387	8	16	41	289	18	63
	Geometry: Perimeter 12											49					2	45	2			29
	Area 13											25						72				50
	Number Pairs 14		90																			
	Lines or Figures 15	282		45								42										55
	Other 16			57		521		13		20	23	43	40		28	73	23	155	79	141		247
	Total Time A-B	805	418	434	1157	1783	1299	524	804	658	641	1152	916	1114	1388	1216	825	1178	812	1248	451	914
	Mean Number of Data Days	24	18	18	22	23	26	16	20	17	16	19	23	24	24	25	22	25	22	26	11	22
	Average Time Per Day	34	23	24	53	76	50	33	40	40	41	60	41	47	57	49	38	47	37	48	42	42

Table 16
Mean Day Tallies and Difficulty Percentages
Per Pupil Per Class for the A-B Period
in Grade 5 Mathematics

CLASSES	01	03	04	05	06	08	09	10	11	12	14	16	17	18	19	21	23	24	25	26	27
Days in A-B	30	30	29	28	30	30	30	30	30	30	29	30	30	30	30	30	30	28	30	15	24
Holidays	5	6	4	3	3	4	6	6	4	4	4	4	4	4	4	6	3	3	3	2	2
Absentism	0	0	0	0	2	0	2	0	0	1	2	3	1	1	0	0	1	3	0	2	0
Missing Data	0	0	7	3	0	0	3	4	3	3	2	0	1	0	1	2	1	0	1	0	0
Non-Instructional	1	6	0	0	1	0	4	0	6	7	2	1	0	1	0	0	0	0	0	0	0
Data Days	24	18	18	22	23	26	16	20	17	16	19	23	23	24	25	22	25	22	26	11	22

Percent Easy	0	0	4	18	8	0	30	2	0	0	10	2	15	0	1	1	10	0	0	0	11
Percent Partially Easy	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	1	0	0	2	0
Percent Hard	0	2	17	14	4	0	31	17	0	0	7	1	2	8	0	4	3	0	2	0	10
Percent Partially Hard	0	2	0	0	0	1	0	0	3	6	10	0	1	4	5	1	16	1	25	8	0
Percent Medium	100	97	79	68	88	98	39	80	97	94	72	98	82	89	92	93	70	98	74	90	79

Table 17

Average Total Time In Minutes Per Pupil Per Class
In Content Areas For The A-B Period In
Grade 5 Reading

	LOG CONTENT AREAS		CLASSES 01	03	04	05	06	08	09	10	11	12	14	16	17	18	19	21	23	24	25	26	27
WORD STRUCTURE	Root words and affixes	1	71	14	103	58	73	216	44	77	82	70	4	20	24	53	58	29		18	18	52	55
	Syllables	2	32		41	123	81	93	68	120	48	26	69	30	108	63	3	18		53	85	38	
WORD MEANING	Synonyms	3	*	120	25	135	18	152	16	1			3	8	30	27		24	55	38	63	11	
	Pronoun reference	4			25	23	7	2	4	21	9		20	70				38	1			*	42
	Other word meaning	5	195	266	25	194	256	322	133	166	180	224	202	58	263	76	201	84	236	355	81	207	130
COMPREHENSION	Verbatim (no rephrasing)	6	66	71	6	19	3	206	123	119	34	95	38		249	163	26	75	3	199	57	5	72
	Translation (paraphrase)	7	30	2		37	45	271	163	123	437	69	193	78	108	29	253	61	3	548	86	85	35
	Inference/Synthesis	8	79	73		17	7	250	133	94	207	98	87	28	112	68	61	116	3	11	58	94	43
	Identifying main ideas	9		80	49	50	183	371	139	88	199	406	83	8	61	138	88	7	493	14	89	22	
	Evaluation of fact and opinion	10			20	3	33		5	5	13	55	4	14	3	28	20	5	3	39	17	11	123
	Other comprehension	11	61		68	63	7	92	122	71	264	158	139	409	243	123	318	1		333	115	8	252
READING PRACTICE	Oral reading	12	140	18	49	118	101	3	191	27	122	65	192	154	182	6[illegible]	75	98	6	51	123		435
	Silent reading	13	298	179	378	429	501	503	62	85	203	81	379	393	679	338	128	216	948	603	1409	318	389
	Reading in content areas	14	163	89	142	108	57	393	130	143	79	136	205	198	275		85		226	65	90	22	82
READING RELATED	Spelling	15	142	279	442	152	587	362	364	425	152	370	459	249	528	487	530	242	328	614	939	92	298
	Grammar	16	16	128	130	201	89	451	322	312	119	271	283	194	234	180	67	272	69	4	8	2	344
	Creative writing	17		85	235	56	145	192	47	58	16	41	49	103	177	221	136	13	143	66	269	221	37
	Study skills	18	38	46	28	8	40	387	84	75	56	80	136		287	313	58	79	239	195	90		154
	Other	19		250	153		3	121	88	96	201	157	283	379	214		373	83	81	178	300	132	
	Total Time A-B		1330	1700	1916	1793	2235	4383	2237	2104	2419	2400	2826	2390	3777	2369	2477	1460	2838	3384	3895	1318	2489
	Mean Number of Data Days		23	24	18	22	23	26	18	18	17	18	20	24	24	25	25	19	25	25	27	12	19
	Average Time Per Day		57	71	107	82	97	170	124	116	139	131	139	101	156	94	100	75	114	134	146	106	128

*=less than 1 minute

Table 18
Mean Day Tallies and Difficulty Percentages
Per Pupil Per Class for the A-B Period
in Grade 5 Reading

CLASSES	01	03	04	05	06	08	09	10	11	12	14	16	17	18	19	21	23	24	25	26	27
Days in A-B	30	30	29	28	30	30	30	30	30	30	29	30	30	30	30	30	30	30	30	15	24
Holidays	5	6	4	3	3	4	6	6	4	4	4	4	4	4	4	6	3	3	3	2	3
Absentism	0	0	0	0	2	0	1	0	0	1	2	2	2	1	0	1	1	2	0	1	0
Missing Data	0	0	7	3	0	0	5	6	2	1	2	0	0	0	1	4	1	0	0	0	0
Non-Instructional	2	0	0	0	2	0	0	0	7	6	1	0	0	0	0	0	0	0	0	0	1
Data Days	23	24	18	22	23	26	18	18	17	18	20	24	24	25	25	19	25	25	27	12	20

Percent Easy	0	0	0	3	1	1	2	3	0	0	1	0	0	0	0	0	0	0	0	0	11
Percent Partially Easy	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	4
Percent Hard	0	1	1	5	4	0	3	5	0	0	4	0	0	0	0	0	6	0	1	0	5
Percent Partially Hard	0	1	0	0	0	0	1	2	0	0	2	0	0	0	1	1	14	0	1	0	0
Percent Medium	100	98	98	92	96	98	95	90	100	100	92	100	100	100	99	99	79	100	98	100	79

number of "non-instructional" days. A few second grade teachers had a considerably higher accumulation of non-instructional days in mathematics than the majority of teachers. Holidays and student absenteeism account for the remainder of the variance in class data days. The last section of Table 12 presents data on the level of difficulty across classes as reported by the teachers. By looking at the final row, which gives the percentage of total time in mathematics that was considered to be of medium difficulty by the teacher, one can identify which teachers differentiated between difficulty levels. By comparing quadrants one can also note that there was greater differentiation in mathematics than in reading across grade levels.

When reviewing Tables 15 through 18 for Grade 5, please note that Class 26 has a 15 day A-B period. This class was part of a year-round school and, due to their vacation schedule, was tested later than the other classes. Class 27 was tested a week late due to BTES scheduling problems. Classes 9, 10, and 27 in the fifth grade reading quadrant each had three teachers involved in the reading instruction. Computing the number of missing data days for these classes was difficult because the mean across teachers does not reflect the number of whole days that were missing. For example, in Class 9 teachers 1 and 2 were missing four log days apiece. Teacher 3 missed nine days. However, there was only <u>one</u> day on which the logs from all three teachers were missing. This situation also occurred with Class 10. Therefore the missing data day tallies of 5 and 6 days (Table 18) for these two classes actually reflect the number of days for which <u>two-thirds</u> of the data were missing. There was no problem in computing missing data days for Class 27 since none of the teachers involved had missed any log days.

<u>Allocation of Daily Time Across Classes</u>. Daily mean times were generated to form an equivalent base for comparing time in content across classes. Time

Table 19

Average Time in Minutes Per Pupil Per Class Per Day
in Grade 2 Mathematics

	LOG CONTENT AREAS	CLASSES																								Total Sample		
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	$\bar{X}$ (SD)	Min	Max
COMPUTATION	Add/Subt No Regrouping Standard Short Form	12 (4)	13 (7)	10 (2)	10 (3)	9 (1)	13 (3)	7 (1)	24 (*)	17 (7)	11 (*)	24 (2)	10 (*)	7 (3)	5 (*)	9 (1)	27 (*)	10 (*)	15 (5)	31 (2)	34 (3)	13 (1)	10 (2)	15 (1)	7 (1)	14 (1)	14 (8)	3	37
	Add/Subt No Regrouping Instructional Algorithm		5 (1)	3 (2)	1 (1)	1 (*)			1 (1)				2 (1)	2 (*)	7 (1)	3 (2)						2 (*)					1 (2)	0	9
	Add/Subt With Regrouping Standard Short Form						* (*)							3 (1)		3 (4)					* (*)	1 (2)					* (1)	0	8
	Add/Subt With Regrouping Instructional Algorithm							2 (1)						7 (2)		10 (6)			* (1)			1 (2)					1 (3)	0	19
	Speed Tests			* (*)	1 (*)	2 (*)	1 (*)	1 (*)	1 (*)	* (*)				2 (*)		1 (1)				* (*)	4 (*)	* (*)	1 (*)	1 (*)	2 (*)		1 (1)	0	4
	Other Computation				5 (*)											3 (4)			* (*)					2 (1)	4 (2)		1 (2)	0	11
CONCEPTS/APPLICATION	Computational Transfer	14 (4)	6 (1)	8 (3)	6 (2)	6 (*)	1 (*)	8 (1)	8 (1)	9 (4)	10 (1)	4 (1)	11 (*)	2 (*)	7 (1)	17 (9)	2 (*)	10 (*)	15 (6)	1 (1)	* (1)	5 (2)	7 (4)	8 (3)	9 (1)	6 (1)	7 (5)	0	27
	Place Value/Numerals	5 (5)	3 (4)	19 (2)	4 (1)	4 (*)	* (1)	19 (1)	13 (1)	8 (5)	6 (*)	3 (1)	5 (*)	19 (2)	3 (*)	2 (2)	1 (*)	5 (1)	8 (4)	3 (2)	1 (1)	2 (3)	2 (*)	1 (*)	9 (1)	9 (2)	6 (6)	0	22
	Word Problems			* (*)	* (1)		4 (1)	* (*)	9 (1)	1 (1)	3 (1)	3 (1)	4 (*)	* (*)	6 (1)			3 (*)	5 (2)	1 (1)		4 (3)	10 (3)	4 (4)	* (*)	1 (*)	2 (3)	0	12
	Money	2 (1)	4 (*)		1 (1)				3 (2)	1 (1)	2 (*)		1 (*)	4 (*)	2 (*)			2 (*)	3 (2)	1 (1)			1 (1)		3 (1)	4 (1)	1 (2)	0	6
	Linear Measurement	6 (1)	2 (2)	4 (1)	4 (2)	1 (*)			* (*)	* (*)	1 (*)	2 (1)	1 (*)	9 (*)				1 (*)	1 (2)	* (*)			1 (1)	1 (1)			1 (2)	0	9
	Fractions				* (1)																				* (*)		* (*)	0	2
	Developmental Activities	1 (2)	1 (2)	5 (*)	4 (1)		15 (3)			* (1)	1 (*)		* (*)		3 (*)	* (1)			* (*)	5 (1)	* (*)	* (*)	9 (1)	8 (1)	2 (1)		2 (4)	0	20
	Other Concepts/ Application	1 (1)	9 (1)	4 (2)	2 (1)	7 (*)	1 (*)		1 (*)	4 (3)	7 (1)	2 (1)	2 (*)	2 (*)	* (*)	* (*)		5 (*)	3 (3)			2 (*)	2 (*)	6 (1)	4 (1)	12 (1)	3 (3)	0	14
	Average Time Per Day	41 (4)	43 (1)	53 (2)	37 (3)	31 (1)	35 (2)	36 (*)	59 (1)	41 (*)	39 (1)	38 (1)	36 (1)	58 (*)	33 (*)	49 (1)	29 (*)	37 (*)	51 (5)	42 (*)	40 (2)	30 (6)	43 (1)	45 (1)	38 (2)	41 (*)	41 (8)	24	61

( ) = Standard Deviation

* = Less than .50 Minutes

Table 20

Average Time In Minutes Per Pupil Per Class Per Day

In Grade 2 Reading

	LOG CONTENT AREAS		CLASSES 01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	Total Sample $\bar{X}$ (SD)	Min	Max
DECODING	Single Consonants	1	2 (1)	2 (1)	9 (2)	1 (*)	* (*)	1 (1)	2 (1)	3 (*)	* (*)	2 (*)	7 (1)	1 (1)	3 (1)	2 (1)	7 (5)	1 (2)	5 (2)	* (*)		* (*)	3 (2)	* (1)	* (1)	4 (2)	5 (1)	2 (3)	0	14
	Consonant blends and digraphs	2	1 (1)	3 (1)	2 (1)	1 (1)	3 (*)		3 (*)	3 (*)	5 (3)	1 (*)	5 (*)	3 (2)	2 (*)	6 (*)	2 (1)	* (*)	10 (2)	2 (2)	* (1)	2 (1)	12 (5)	2 (2)	2 (2)	* (*)	3 (2)	3 (3)	0	21
	Variant consonants (c or g)	3		* (*)		1 (*)	3 (1)		* (*)	3 (*)				* (*)	1 (*)	* (*)	1 (1)		* (*)	1 (1)	4 (4)		6 (6)	1 (1)	* (*)		1 (*)	1 (2)	0	11
	Short vowels	4	2 (2)	1 (1)	8 (2)	1 (1)	9 (1)	13 (5)	4 (1)	3 (*)		3 (1)	6 (1)	4 (1)	3 (2)	9 (1)	5 (2)	2 (2)	8 (1)	2 (2)		10 (8)	4 (5)	1 (2)	2 (2)	3 (2)	4 (1)	4 (4)	0	20
	Long vowels	5	1 (1)	1 (2)	3 (1)	1 (1)	18 (2)	* (*)	1 (*)	2 (*)	1 (*)	1 (*)	2 (*)	3 (1)	* (*)	3 (*)	2 (1)	2 (*)	2 (2)	2 (2)		7 (5)	1 (*)		1 (*)	6 (2)	4 (1)	3 (4)	0	22
	Other decoding	6		3 (1)	1 (1)	* (1)	8 (1)	* (*)		6 (*)	17 (3)	* (*)	2 (*)	1 (1)		2 (1)	* (*)	1 (*)	1 (*)	3 (1)	7 (5)	1 (*)	1 (1)	10 (1)	12 (3)	5 (1)	3 (1)	3 (5)	0	23
WORD STRUCTURE	Compound words	7		2 (*)	* (*)		1 (*)		3 (1)	2 (1)	1 (1)	* (*)	1 (*)	1 (1)		2 (*)	* (*)	* (*)	* (*)	1 (*)		1 (1)		1 (1)	1 (1)	* (*)	2 (*)	1 (1)	0	3
	Root words and affixes	8	1 (1)	2 (2)	2 (1)		1 (*)		3 (2)	2 (*)	1 (1)	1 (1)	2 (*)	2 (*)	* (*)	6 (1)	3 (3)	1 (*)	1 (*)	2 (2)	1 (1)			1 (1)		* (*)	1 (*)	1 (2)	0	8
	Syllables	9		* (*)	* (*)				2 (1)	* (*)	* (*)	* (*)	* (*)	2 (1)		4 (*)	1 (1)	* (*)	* (*)	1 (1)								* (1)	0	5
WORD MEANING	Synonyms	10	* (*)	* (*)			* (*)		* (*)	* (*)	* (*)			* (*)		2 (*)	1 (*)			1 (1)		2 (3)		* (*)			1 (*)	* (1)	0	6
	Pronoun reference	11			* (*)				* (*)	1 (*)	* (*)		* (*)	* (*)		1 (*)			* (*)	1 (*)	1 (1)							* (*)	0	3
	Other word meaning	12	8 (1)	1 (1)	1 (*)		5 (1)		6 (1)	2 (*)	10 (1)	1 (1)	7 (1)	2 (1)		1 (*)	3 (2)	2 (1)	3 (1)	6 (2)	10 (2)	1 (2)	* (1)	1 (*)	* (*)	1 (1)	7 (1)	3 (3)	0	13
COMPREHENSION	Understanding events	13	6 (2)	2 (1)	2 (1)	1 (1)	2 (1)	1 (1)	5 (1)	4 (*)	* (*)	3 (1)	6 (*)	2 (*)	4 (2)	4 (*)	1 (1)	2 (1)	2 (1)	2 (2)	9 (1)	5 (3)	3 (2)	3 (2)	3 (2)	1 (1)	3 (1)	3 (2)	0	10
	Understanding relationships	14	1 (1)	1 (1)	6 (2)		1 (*)	3 (1)	* (1)	5 (1)	* (*)	2 (1)	6 (1)	* (*)	* (1)	3 (*)	2 (2)	* (*)	1 (*)	1 (1)	2 (2)	* (*)	1 (1)	1 (1)		* (1)	4 (1)	2 (2)	0	10
	Identifying main ideas	15	1 (1)	* (*)	1 (2)	* (*)	* (*)	3 (1)	1 (*)	1 (*)		9 (4)	* (*)	1 (*)	1 (1)	2 (*)	1 (1)	2 (1)	* (*)	4 (1)	2 (2)	* (*)	1 (1)	1 (1)	1 (*)	* (1)	2 (*)	1 (2)	0	12
	Other Comprehension	16	4 (2)	2 (1)	3 (2)	1 (*)	* (*)	* (*)	8 (1)	1 (*)	3 (1)	2 (1)	1 (*)	* (*)	1 (2)	3 (1)	9 (2)	1 (*)	3 (1)	3 (1)			2 (2)	1 (1)	1 (1)	4 (3)	6 (2)	2 (3)	0	11
READING PRACTICE	Sight words (reading single words	17	6 (3)		4 (1)	4 (3)	4 (1)	8 (5)	3 (1)	3 (*)	* (*)	8 (3)	7 (*)	5 (*)	7 (3)	8 (*)	19 (2)	2 (1)	6 (1)	1 (1)	4 (2)	8 (4)	* (*)	1 (*)	2 (1)	2 (1)	11 (2)	5 (5)	0	21
	Oral reading of text	18	5 (1)	9 (1)	7 (2)	1 (*)	8 (2)	5 (3)	7 (1)	3 (*)	4 (1)	6 (3)	6 (*)	8 (1)	12 (6)	5 (*)	4 (1)	* (1)	11 (1)	11 (3)	5 (1)	12 (4)	1 (1)	2 (1)	3 (2)	7 (3)	14 (4)	6 (4)	0	21
	Silent reading of text	19	14 (2)	9 (1)	9 (2)	* (*)	2 (1)	5 (4)	3 (1)	2 (*)	3 (1)	19 (3)	10 (1)	2 (*)	7 (4)	6 (*)	4 (*)	5 (2)	6 (*)	6 (4)	12 (1)	10 (1)	3 (2)	19 (4)	13 (4)	1 (1)	1 (*)	7 (6)	0	23
	Reading in content areas	20	1 (1)		* (*)		* (*)	* (*)	5 (1)	1 (*)	* (*)	1 (*)	3 (*)	* (*)	* (1)	2 (*)	* (*)	4 (2)	11 (1)			* (*)	4 (2)			2 (1)	2 (*)	1 (2)	0	11
	Listening while reading	21		2 (1)	* (*)	1 (1)		1 (1)	4 (1)	1 (*)	9 (*)	1 (*)	* (*)		3 (*)	3 (1)	8 (1)			* (*)	2 (1)	2 (*)	3 (*)	* (*)	* (*)	2 (1)		2 (2)	0	10
READING RELATED	Spelling (no specific decoding focus)	22	10 (2)	12 (1)	1 (*)	* (1)	1 (*)	1 (1)	5 (2)	8 (1)	2 (1)	10 (1)	9 (1)	5 (*)	7 (*)	5 (*)	5 (1)	4 (*)	12 (1)	3 (*)	1 (*)	10 (2)	* (*)	* (*)	* (*)	* (*)	7 (1)	10 (1)	5 (4)	0	14
	Grammar	23	1 (1)	11 (2)	3 (1)	2 (1)	* (*)	1 (1)	1 (1)	3 (*)	1 (*)	* (*)	7 (1)	5 (*)	3 (1)	10 (1)	1 (1)		10 (1)	1 (1)		* (*)		* (*)	3 (1)	4 (*)		3 (3)	0	15
	Creative writing	24	13 (3)	8 (*)	14 (2)	8 (1)	* (*)	15 (1)	13 (1)	4 (1)	7 (1)	4 (*)	8 (1)	2 (*)	12 (1)	2 (1)		12 (*)	1 (*)	6 (1)	4 (1)	5 (2)	3 (1)	8 (2)	5 (3)	3 (*)	8 (3)	7 (5)	0	18
	Study skills	25	7 (1)	1 (1)	1 (1)	* (1)	1 (*)		2 (1)	3 (*)	* (*)	1 (*)	3 (*)	* (*)	4 (*)	10 (*)			6 (*)	8 (1)		2 (*)	1 (*)	5 (1)	5 (1)	7 (1)	8 (1)	3 (3)	0	11
	Other (copying, developmental)	26	22 (*)	14 (3)	12 (1)	10 (1)	11 (2)	69 (4)	23 (1)	3 (1)	13 (*)	23 (*)	14 (1)	7 (*)	12 (2)	17 (1)		13 (*)	12 (*)	15 (1)	3 (1)	12 (1)	8 (1)	9 (1)	7 (*)	8 (1)	2 (1)	14 (13)	0	74
Average Time Per Day			106 (5)	86 (3)	92 (8)	34 (2)	80 (3)	127 (3)	104 (2)	67 (1)	79 (1)	98 (2)	112 (4)	56 (3)	82 (2)	118 (4)	79 (1)	53 (1)	112 (1)	84 (4)	66 (2)	91 (2)	57 (5)	68 (6)	62 (2)	69 (3)	99 (9)	83 (22)	32	131

( ) = Standard Deviation

* = Less than .50 Minutes

Table 21

Average Time In Minutes Per Pupil Per Class Per Day
in Grade 5 Mathematics

	LOG CONTENT AREAS		CLASSES 01	03	04	05	06	08	09	10	11	12	14	16	17	18	19	21	23	24	25	26	27	Total Sample $\bar{X}$ (SD)	MIN	MAX
COMPUTATION	Addition	1	1 (*)	1 (*)	4 (2)			8 (1)	8 (2)	5 (1)			1 (*)	1 (*)	4 (8)	* (*)	2 (*)	7 (7)	1 (*)	1 (*)	1 (1)		2 (*)	2 (4)	0	21
	Subtraction	2	1 (*)	3 (1)	7 (2)			10 (1)	12 (3)	3 (1)			2 (1)	8 (9)	6 (7)		7 (*)	5 (4)	1 (*)		1 (1)		1 (*)	3 (4)	0	25
	Multiplication: Basic Facts	3	2 (*)	* (*)	1 (1)		* (*)	1 (*)					4 (*)	8 (6)	2 (2)	3 (7)	2 (*)	2 (3)				1 (*)		1 (3)	0	18
	Speed Tests	4	2 (*)	2 (*)	* (*)	5 (*)	2 (1)				1 (*)	* (*)		3 (2)	* (1)		* (*)	1 (1)	1 (*)		1 (*)	6 (*)		1 (2)	0	8
	Algorithm	5	13 (1)	6 (3)	1 (1)	2 (1)	* (*)	12 (1)	2 (2)	27 (4)			19 (3)	11 (10)	21 (8)	9 (19)	16 (1)	5 (5)	6 (1)		8 (4)	6 (12)	2 (*)	8 (9)	0	48
	Division	6	4 (1)	1 (1)		5 (4)	8 (11)	16 (2)			1 (*)	1 (*)	16 (8)		5 (5)	38 (21)	1 (*)	6 (7)	24 (2)		10 (3)	19 (17)	5 (1)	8 (12)	0	55
	Fractions	7				16 (2)	33 (21)				36 (5)	37 (3)			1 (2)			3 (2)		26 (8)	5 (10)	8 (19)	8 (*)	8 (14)	0	52
	Other	8			2 (*)		7 (9)											3 (2)	1 (*)	1 (2)	3 (1)	* (1)	* (*)	1 (2)	0	20
CONCEPTS/APPLICATION	Computational Transfer	9		3 (2)		24 (7)	1 (1)		4 (2)	1 (*)	1 (*)	1 (1)	7 (1)	7 (3)	4 (4)	6 (6)	2 (*)	5 (5)	1 (*)	5 (3)	1 (1)	1 (2)	2 (*)	4 (6)	0	34
	Numerals/Place Value (whole numbers)	10			3 (4)	1 (2)	1 (*)		1 (1)				2 (1)		* (*)		1 (*)	* (1)	1 (*)	* (1)	2 (2)		1 (*)	1 (2)	0	12
	Word Problems	11		3 (1)	* (*)		* (*)	3 (*)	4 (2)	3 (1)			1 (*)	2 (1)	2 (3)	* (*)	16 (*)	* (*)	1 (*)	2 (2)	11 (1)	2 (3)	3 (*)	3 (4)	0	16
	Geometry: Perimeter	12											2 (1)						2 (*)	* (*)			2 (*)	* (1)	0	4
	Area	13											1 (*)						3 (1)				2 (*)	* (1)	0	4
	Number Pairs	14		5 (*)																				* (1)	0	5
	Lines or Figures	15	12 (*)		3 (*)								2 (1)										3 (*)	1 (3)	0	13
	Other	16			3 (*)		23 (2)		1 (1)		1 (*)	1 (1)	2 (1)	2 (1)		1 (*)	3 (1)	1 (2)	6 (1)	3 (8)	5 (1)		11 (1)	3 (5)	0	26
	Average Time Per Day		34 (2)	23 (3)	24 (1)	53 (1)	76 (3)	50 (5)	33 (7)	40 (5)	40 (5)	41 (3)	60 (5)	41 (8)	47 (14)	57 (*)	49 (1)	38 (2)	47 (4)	38 (5)	48 (1)	42 (14)	42 (1)	44 (13)	20	80

( ) = Standard Deviation

* = Less .50 Minutes

Table 22

Average Time In Minutes Per Pupil Per Class Per Day
in Grade 5 Reading

LOG CONTENT AREAS		CLASSES 01	03	04	05	06	08	09	10	11	12	14	16	17	18	19	21	23	24	25	26	27	Total Sample $\bar{X}$ (SD)	Min	Max
WORD STRUCTURE	Root words and affixes 1	3 (*)	1 (*)	6 (1)	2 (2)	3 (1)	8 (2)	2 (1)	4 (*)	5 (1)	4 (1)	* (*)	1 (1)	1 (*)	2 (1)	2 (*)	1 (1)		1 (1)	1 (*)	4 (3)	3 (*)	3 (2)	0	10
	Syllables 2	1 (*)		2 (*)	6 (1)	4 (1)	4 (1)	4 (1)	6 (1)	3 (2)	1 (1)	3 (*)	1 (1)	5 (1)	3 (*)	* (*)	1 (1)		2 (1)	3 (1)	3 (2)		2 (2)	0	8
WORD MEANING	Synonyms 3	* (*)	5 (*)	1 (*)	6 (1)	1 (1)	6 (1)	1 (1)	* (*)			* (*)	* (*)	1 (*)	1 (*)	8 (1)	1 (1)	2 (1)	1 (1)	2 (*)	1 (1)		1 (2)	0	8
	Pronoun reference 4			1 (*)	1 (*)	* (*)	* (*)	* (1)	1 (*)	* (*)		1 (1)	3 (1)			1 (*)	2 (1)	* (*)			* (*)	2 (*)	1 (1)	0	4
	Other word meaning 5	8 (1)	11 (1)	1 (*)	9 (*)	11 (2)	12 (2)	8 (1)	10 (1)	10 (3)	12 (4)	10 (1)	3 (1)	11 (2)	3 (*)	8 (1)	4 (2)	9 (2)	14 (5)	3 (1)	17 (4)	7 (*)	9 (4)	1	22
COMPREHENSION	Verbatim (no rephrasing) 6	3 (*)	3 (1)	* (*)	1 (*)	* (*)	8 (2)	7 (1)	7 (2)	2 (1)	5 (2)	2 (1)		10 (2)	7 (2)	1 (*)	4 (1)	* (*)	8 (1)	2 (*)	* (*)	3 (*)	4 (3)	0	14
	Translation (paraphrase) 7	1 (*)	* (*)		2 (1)	2 (1)	10 (2)	9 (1)	7 (1)	26 (4)	4 (1)	10 (1)	3 (*)	4 (*)	1 (1)	10 (1)	4 (3)	* (*)	22 (4)	3 (1)	7 (2)	2 (*)	6 (7)	0	31
	Inference/Synthesis 8	3 (*)	3 (*)		1 (*)	* (*)	10 (2)	8 (1)	6 (*)	12 (2)	5 (1)	4 (1)	1 (1)	5 (1)	3 (1)	2 (1)	6 (1)	* (*)	* (1)	2 (1)	8 (3)	2 (*)	4 (3)	0	16
	Identifying main ideas 9		3 (*)	3 (1)	2 (1)	8 (2)	14 (1)	7 (2)	5 (1)	11 (3)	22 (4)	4 (1)	* (*)	3 (1)	5 (1)	4 (*)	* (1)	20 (2)	1 (1)	3 (1)	2 (1)		6 (6)	0	28
	Evaluation of fact and opinion 10			1 (*)	* (*)	2 (1)		* (*)	1 (1)	1 (1)	3 (1)	* (*)	1 (1)	* (*)	1 (1)	1 (*)	* (*)	* (*)	2 (*)	1 (*)	1 (1)	7 (*)	1 (2)	0	7
	Other comprehension 11	3 (*)		4 (1)	3 (1)	* (1)	4 (1)	7 (1)	5 (1)	15 (*)	9 (1)	7 (1)	17 (1)	10 (2)	5 (1)	13 (3)	* (*)		13 (1)	4 (*)	1 (1)	12 (1)	6 (5)	0	19
READING PRACTICE	Oral reading 12	6 (*)	1 (*)	3 (1)	5 (1)	4 (2)	* (*)	10 (1)	2 (*)	7 (1)	4 (1)	9 (1)	6 (1)	8 (2)	2 (1)	3 (*)	5 (2)	* (1)	2 (1)	5 (1)		24 (*)	5 (5)	0	24
	Silent reading 13	13 (1)	7 (1)	21 (1)	20 (*)	22 (1)	20 (2)	3 (*)	5 (*)	12 (3)	4 (1)	19 (3)	16 (1)	28 (2)	13 (*)	5 (1)	11 (3)	38 (4)	24 (1)	53 (1)	25 (4)	20 (1)	18 (11)	3	55
	Reading in content areas 14	7 (*)	4 (*)	8 (1)	5 (*)	3 (2)	15 (2)	8 (1)	11 (*)	5 (1)	7 (1)	10 (2)	9 (1)	11 (1)		3 (*)		9 (1)	3 (*)	3 (1)	2 (1)	4 (1)	6 (4)	0	18
READING RELATED	Spelling 15	6 (1)	12 (1)	25 (1)	7 (1)	25 (*)	14 (1)	19 (2)	21 (3)	9 (1)	20 (4)	22 (3)	11 (*)	22 (3)	19 (*)	21 (1)	12 (9)	13 (1)	24 (5)	35 (1)	7 (4)	15 (2)	17 (8)	3	37
	Grammar 16	1 (*)	5 (*)	7 (1)	9 (*)	4 (1)	17 (3)	17 (2)	15 (3)	7 (2)	15 (3)	14 (2)	8 (2)	10 (1)	7 (1)	3 (*)	14 (3)	3 (*)	* (*)	* (1)	* (*)	17 (*)	8 (6)	0	20
	Creative writing 17		4 (1)	13 (1)	3 (*)	6 (1)	7 (2)	2 (1)	3 (*)	1 (*)	2 (2)	2 (1)	4 (1)	7 (1)	9 (*)	6 (*)	1 (1)	6 (1)	3 (1)	10 (*)	18 (2)	2 (1)	5 (4)	0	20
	Study skills 18	2 (*)	2 (*)	2 (*)	* (*)	2 (1)	15 (3)	5 (2)	4 (1)	3 (1)	4 (*)	7 (1)		12 (3)	12 (2)	2 (*)	4 (2)	10 (2)	8 (2)	3 (1)		8 (*)	5 (4)	0	18
	Other 19		10 (*)	8 (1)		* (*)	5 (1)	5 (*)	5 (1)	12 (1)	9 (1)	14 (2)	16 (1)	9 (4)		15 (*)	4 (3)	3 (*)	7 (1)	11 (*)	11 (3)		7 (5)	0	17
Average Time Per Day		57 (2)	71 (2)	107 (3)	82 (1)	97 (2)	170 (22)	124 (5)	116 (12)	139 (9)	131 (14)	139 (7)	101 (2)	156 (5)	94 (2)	100 (4)	75 (15)	114 (6)	134 (6)	146 (5)	106 (15)	128 (3)	113 (30)	55	195

( ) = Standard Deviation
* = Less than 50 Minutes

in each content area for an individual student was divided by the number of data days for that student. Student daily means within class were then used to compute a daily mean per pupil per class as shown in Tables 19 through 22. Although these data were computed with student means the result is approximately the same as dividing the class means from Tables 11, 13, 15, and 17 by the number of A-B data days for each class. These means and accompanying standard deviations represent a hypothetical student day per class. That is, on a day when instruction occurred how much time was spent and how was it allocated? As in the other tables the means and standard deviations have been rounded to the nearest whole minute. Anything less than 0.50 minutes has been notated with an asterisk.

Student daily means and ranges for each content area based on the total sample are provided in the last three columns. On the average, a student in the BTES spent 14 minutes a day in Addition and Subtraction Without Regrouping in the Standard Short Form (Table 19). The minimum daily mean for any one student in this category was 3 minutes and the maximum was 37 minutes. This was the only content category in Grade 2 mathematics where every student was allocated some time. The minimum value of zero for the remaining content categories are true zeros. That is, in each of these categories there was some student who throughout the A-B period had no instruction (or recorded instruction) in that content.

Proportion of Time Allocated to Content Across Classes. The allocated time data can be viewed in terms of proportions rather than number of minutes allocated. Tables 23 through 26 show the proportion of total time allocated in each class to the specific content categories. These proportions were computed by dividing the mean total time in the A-B period per student per class in a specific content by the mean total time for mathematics (or reading).

Table 23

Average Proportion of Total Time Allocated to Specific Content Areas
In
Grade 2 Mathematics

		CLASSES																								
	LOG CONTENT AREAS	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
COMPUTATION	Add/Subt No Regrouping Standard Short Form 1	30	31	19	26	30	38	19	41	40	27	61	27	13	16	18	92	28	30	75	85	42	24	33	18	34
	Add/Subt No Regrouping Instructional Algorithm 2		12	5	1	4			1				7	3	20	6						6				
	Add/Subt With Regrouping Standard Short Form 3						1							6		6					*	4				
	Add/Subt With Regrouping Instructional Algorithm 4						1	4						13		21			1			3				
	Speed Tests 5			*	3	8	2	2	2	1				3		2				*	9	*	3	1	4	
	Other Computation 6				13											6			*					5	10	
CONCEPTS/APPLICATION	Computational Transfer 7	32	14	16	16	20	3	23	13	21	25	11	30	3	23	37	6	27	30	2	1	17	17	19	23	11
	Place Value/Numerals 8	12	5	36	11	12	2	51	21	18	16	7	15	34	8	3	2	14	15	8	3	7	4	1	22	19
	Word Problems 9			*	1		12	*	14	4	7	9	10	*	18			9	9	2		15	24	8	1	2
	Money 10	6	8		1				6	4	4		2	7	5			6	6	2			1		8	9
	Linear Measurement 11	15	6	7	10	4			*	*	2	6	3	16				3	3	*			2	2		
	Fractions 12				*																				*	
	Developmental Activities 13	2	3	9	11		41			*	2		*		8	1			*	11	1	*	22	17	4	
	Other Concepts/ Application 14	3	22	7	6	21	1		1	11	17	6	6	3	1	*		14	6			7	4	14	10	25

* = less than 1 percent

Table 24

Proportion of Total Time Allocated to
Specific Content Areas in
Grade 2 Reading

CLASSES

	LOG CONTENT AREAS	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
DECODING	Single consonants 1	2	3	10	2	*	*	1	4	*	2	6	1	4	2	9	2	5	*		*	5	*	*	5	5
	Consonant blends & digraphs 2	1	3	2	4	3		3	4	6	1	5	5	2	5	3	*	8	3	*	2	21	3	3	*	3
	Variant consonants (c or g) 3		*		3	4		*	4				*	*	*	1		*	1	7		10	1	*		*
	Short vowels 4	2	1	9	2	11	10	4	5		3	5	7	4	7	6	4	8	3		11	7	2	3	4	4
	Long vowels 5	*	2	3	3	22	*	1	2	1	*	2	5	*	2	2	3	2	3		8	1		1	9	4
	Other decoding 6		4	*	1	10	*		9	21	*	2	2		2	*	1	*	3	10	1	2	15	19	8	3
WORD STRUCTURE	Compound words 7		2	*		1		3	3	1	*	*	2		1	*	*	*	1		1		*	1	*	2
	Root words and affixes 8	*	2	2		*		2	2	1	*	1	4	*	5	3	1	*	3	1			2		*	*
	Syllables 9		*	*				2	*	*	*	*	3		3	*	1	*	*							
WORD MEANING	Synonyms 10	*	*			*		*	*	*			*		1	1			2		2		*			*
	Pronoun reference 11			*				*	1	*		*	*		1			*	1	1						
	Other word meaning 12	7	*	1		6		6	2	13	*	6	3		*	3	5	3	7	15	1	*	2	*	2	7
COMPREHENSION	Understanding events 13	6	2	2	4	3	1	5	6	*	3	5	4	5	3	2	3	1	2	13	6	5	5	5	2	3
	Understanding relationships 14	1	1	7		1	3	*	7	*	2	5	*	*	2	3	*	1	*	3	*	2	1		*	4
	Identifying main ideas 15	1	*	2	*	*	2	*	1		9	*	2	*	2	1	3	*	4	3	*	1	1	1	*	2
	Other comprehension 16	4	2	3	4	*	*	7	1	4	2	*	*	1	2	11	1	3	4			4	2	2	6	6
READING PRACTICE	Sight words (reading single words) 17	6		4	11	5	6	2	4	*	9	6	9	9	7	24	4	5	*	7	8	*	1	3	3	11
	Oral reading of text 18	4	11	7	2	9	4	7	4	5	7	6	14	14	4	5	*	9	13	7	13	2	3	5	11	14
	Silent reading of text 19	14	10	10	1	3	4	3	3	3	19	9	3	8	5	5	9	5	6	18	11	5	29	21	2	1
	Reading in content areas 20	*		*		*	*	5	2	*	1	2	*	*	2	*	6	10			*	6			3	2
	Listening while reading 21		2	*	3		*	4	2	12	1	*		4	3	10			*	3	2	6	*	*	3	
READING RELATED	Spelling (no specific decoding focus) 22	9	14	1	1	2	1	5	13	3	10	8	8	8	4	6	8	10	3	2	11	*	*	*	10	10
	Grammar 23	*	13	4	7	*	1	1	4	2	*	7	9	3	8	1		9	1		*		*	6	5	
	Creative writing 24	12	9	15	22	*	12	13	6	8	4	7	3	15	2		22	1	8	6	6	6	11	9	4	8
	Study skills 25	7	*	1	*	1		2	4	*	1	3	*	4	9			5	9		2	2	8	9	10	8
	Other (copying, developmental) 26	20	16	13	30	14	55	22	5	17	23	13	13	15	14		24	11	18	4	14	14	13	11	11	2

* = less than 1 percent

Table 25

Average Proportion of Total Time Allocated to Specific Content Areas

Grade 5 Mathematics

		CLASSES																				
	LOG CONTENT AREAS	01	03	04	05	06	08	09	10	11	12	14	16	17	18	19	21	23	24	25	26	27
COMPUTATION	Addition 1	2	3	18			16	24	13			*	2	10	*	3	18	1	2	2		5
	Subtraction 2	2	12	28			20	37	8			4	16	12		15	12	1		2		2
	Multiplication: Basic Facts 3	6	*	5		*	1					7	21	5	5	4	5				1	
	Speed Tests 4	4	7	*	8	3				2	1		8	1		*	4	3		1	14	
	Algorithm 5	39	28	4	4	*	24	8	69			32	27	44	15	32	14	13		17	14	5
	Division 6	12	2		11	10	33			3	3	27		12	67	1	16	51		21	47	12
	Fractions 7				30	45				90	90			2					67	10	17	19
	Other 8			8		9											7	1	2	7	*	1
CONCEPTS/APPLICATION	Computational Transfer 9		12		44	2		11	2	2	3	11	18	9	10	4	7	2	13	2	2	5
	Numerals/Place Value (whole numbers) 10			12		*		4				3	4	*		2	13	3	*	3		2
	Word Problems 11		14	*	3	*	6	14	8			3		5	1	32	1	1	5	23	4	7
	Geometry: Perimeter 12											4					*	4	*			3
	Area 13											2						6				5
	Number Pairs 14		22																			
	Lines or Figures 15	35		10								4										6
	Other 16			13		29		2		3	4	4	4		2	6	3	13	10	11		27

* = less than 1 percent

Table 26

Proportion Of Total Time Allocated To
Specific Content Areas In
Grade 5 Reading

CLASSES

LOG CONTENT AREAS			01	03	04	05	06	08	09	10	11	12	14	16	17	18	19	21	23	24	25	26	27
WORD STRUCTURE	Root words and affixes	1	5	*	5	3	3	5	2	4	3	3	*	*	*	2	2	2		*	*	4	2
	Syllables	2	2		2	7	4	2	3	6	2	1	2	1	3	3	*	1		2	2	3	
WORD MEANING	Synonyms	3	*	7	1	8	*	3	*	*			*	*	*	1		2	2	1	2	*	
	Pronoun reference	4			1	1	*	*	*	1	*		*	3				3	*			*	2
	Other word meaning	5	15	16	1	11	11	7	6	8	7	9	7	2	7	3	8	6	8	10	2	16	5
COMPREHENSION	Verbatim (no rephrasing)	6	5	4	*	1	*	5	5	6	1	4	1		7	7	1	5	*	6	1	*	3
	Translation (paraphrase)	7	2	*		2	2	6	7	6	18	3	7	3	3	1	10	4	*	16	2	6	1
	Inference/Synthesis	8	6	4	4	1	*	6	6	4	9	4	3	1	3	3	2	8	*	*	1	7	2
	Identifying main ideas	9		5	5	3	8	8	6	4	8	17	3	*	2	6	4	*	17	*	2	2	
	Evaluation of fact and opinion	10				*	1		*	*	*	2	*	*	*	1	*	*	*	1	*	*	5
	Other comprehension	11	5			4	*	2	5	3	11	7	5	17	6	5	13	*		10	3	*	10
READING PRACTICE	Oral reading	12	11	1	1	7	5	*	9	1	5	3	7	6	5	3	3	7	*	2	3		17
	Silent reading	13	22	11	11	24	22	11	3	4	8	3	13	16	18	14	5	15	33	18	36	24	16
	Reading in content areas	14	12	5	5	6	3	9	6	7	3	6	7	8	7		3		8	2	2	2	3
READING RELATED	Spelling	15	11	16	16	8	26	8	16	20	6	15	16	10	14	21	21	17	12	18	24	7	12
	Grammar	16	1	8	8	11	4	10	14	15	5	11	10	8	6	8	3	19	2	*	*	*	14
	Creative writing	17		5	5	3	6	4	2	3	*	2	2	4	5	9	5	*	5	2	7	17	1
	Study skills	18	3	3	3	*	2	9	4	4	2	3	5		8	13	2	5	8	6	2		6
	Other	19		15	15		*	3	4	5	8	7	10	16	6		15	6	3	5	10		

* = Less than 1 percent

Using second grade mathematics as an example, the class means shown in Table 11 were used to compute the proportions listed in Table 23. In Class 1, 76 minutes were spent in the first content category (Table 11) representing 30 percent (Table 23) of the total time (253 minutes) in mathematics.

The proportional data reflects a number of important differences among classes including the use of differing curriculum programs. This format provides a rather concise instructional description for each of the classes and clearly identifies a class's pattern of instructional emphases.

Summary

This report provides descriptive data on allocated time in reading and mathematics for grades 2 and 5 as reported by the participating BTES teachers during the A-B intertest period. On the average the A-B period included 24 school days per class. Forty-five of the 46 participating classes completed the A-B period. Two second grade classes were missing close to 50 percent of their log data and will probably be dropped from any A-B analysis. For the 23 remaining second grade classes, log data were received for 97 percent of the total school days. At fifth grade, data were received for 94 percent of the A-B school days.

Class means are provided on the amount of time accumulated over the A-B period in specific content categories. Daily means and the mean percent of total time allocated to specific content areas are also presented.

References

Cahen, L. Selection of second and fifth grade target students for Phase III-B (Technical Note III-1, Part II, Beginning Teacher Evaluation Study). San Francisco: Far West Laboratory, 1977.

Filby, N. and Dishaw, M. Refinement of reading and mathematics tests through an analysis of reactivity (Technical Report III-6, Beginning Teacher Evaluation Study). San Francisco: Far West Laboratory, 1976.

APPENDIX A

Teacher Logs
and
Content Glossaries

Teacher Logs	A-1
Glossary, Grade 2 Mathematics	A-5
Glossary, Grade 2 Reading	A-13
Glossary, Grade 5 Mathematics	A-23
Glossary, Grade 5 Reading	A-26

1-2 GRADE 2 MATHEMATICS

3-4 TEACHER: _____

5-8 DATE: ☐☐ ☐☐
Month Day

.9 OBSERVATION DAY

YES ____

NO ____

CODES:

DIFFICULTY

EASY E or (E)
MEDIUM Blank
HARD H or (H)

ABSENCE (A)

STUDENT 10-11

	CONTENT												
COMPUTATION	Addition/Subtraction No Regrouping - Standard Short Form	1											15-17
	Addition/Subtraction No Regrouping - Instructional Algorithms with Place Value Transformations	2											18-20
	Addition/Subtraction With Regrouping - Standard Short Form	3											21-23
	Addition/Subtraction With Regrouping - Instructional Algorithms with Place Value Transformations	4											24-26
	Speed Tests	5											27-29
	Other	6											30-32
CONCEPTS/ APPLICATION	Computational Transfer (properties, no. patterns, missing addends, number sentences with inequalities)	7											33-35
	Place Value/Numerals	8											36-38
	Word Problems	9											39-41
	Money	10											42-44
	Linear Measurement	11											45-47
	Fractions	12											48-50
	Developmental Activities	13											51-53
	Other	14											54-56
	TOTAL TIME (minutes)												57-59

A-1

1-2 GRADE 2 READING

3-4 TEACHER: _____

5-8 DATE: ☐☐ ☐☐ (Month Day)

9 OBSERVATION DAY

YES ____

NO ____

CODES

DIFFICULTY:

EASY E or (E)
MEDIUM Blank
HARD H or (H)

ABSENCE (A)

STUDENT 10-11

	CONTENT												
DECODING	Single consonants	1											15-17
	Consonant blends & digraphs	2											18-20
	Variant consonants (c or g)	3											21-23
	Short vowels	4											24-26
	Long vowels	5											27-29
	Other decoding	6											30-32
WORD STRUCTURE	Compound words	7											33-35
	Root words and affixes	8											36-38
	Syllables	9											39-41
WORD MEANING	Synonyms	10											42-44
	Pronoun reference	11											45-47
	Other word meaning	12											48-50
COMPREHENSION	Understanding events	13											51-53
	Understanding relationships	14											54-56
	Identifying main ideas	15											57-59
	Other comprehension	16											60-62
READING PRACTICE	Sight words (general practice at reading single words)	17											15-17
	Oral reading of text	18											18-20
	Silent reading of text	19											21-23
	Reading in content areas	20											24-26
	Listening while reading	21											27-29
READING RELATED	Spelling (without specific decoding focus)	22											30-32
	Grammar	23											33-35
	Creative writing	24											36-38
	Study skills	25											39-41
	Other (copying, developmental)	26											42-44
	TOTAL TIME (minutes)												45-47

78-79 TL

1-2 GRADE 5 MATHEMATICS

3-4 TEACHER: _____

5-8 DATE: ☐☐ ☐☐
Month Day

9 OBSERVATION DAY
YES ____
NO ____

CODES:

DIFFICULTY
EASY E or (E)
MEDIUM Blank
HARD H or (H)

ABSENCE (A)

STUDENT 10-11

	CONTENT												
COMPUTATION	Addition	1											15-17
	Subtraction	2											18-20
	Multiplication - Learning basic facts	3											21-23
	Speed tests in basic facts	4											24-26
	Multiplication algorithm	5											27-29
	Division	6											30-32
	Fractions	7											33-35
	Other	8											36-38
CONCEPTS/ APPLICATION	Computational Transfer (factors, multiples, number patterns, properties)	9											39-41
	Numerals/Place value (whole numbers)	10											42-44
	Word Problems	11											45-47
	Geometry - Perimeter	12											48-50
	Area	13											51-53
	Number pairs	14											54-56
	Lines or figures	15											57-59
	Other	16											60-62
	TOTAL TIME (minutes)												63-65

78-79 TL

A-3

1-2 GRADE 5 READING

3-4 TEACHER: _____

5-8 DATE: ☐☐ ☐☐ (Month Day)

9 OBSERVATION DAY

YES ____

NO ____

CODES

DIFFICULTY:

EASY — E or (E)
MEDIUM — Blank
HARD — H or (H)

ABSENCE (A)

STUDENT 10-11

	CONTENT								
WORD STRUCTURE	Root words and affixes	1							15-17
	Syllables	2							18-20
WORD MEANING	Synonyms	3							21-23
	Pronoun reference	4							24-26
	Other word meaning	5							27-29
COMPREHENSION	Verbatim (no rephrasing)	6							30-32
	Translation (paraphrase)	7							33-35
	Inference/Synthesis	8							36-38
	Identifying main ideas	9							39-41
	Evaluation of fact and opinion	10							42-44
	Other comprehension	11							45-47
READING PRACTICE	Oral reading	12							48-50
	Silent reading	13							51-53
	Reading in content areas	14							54-56
READING RELATED	Spelling	15							57-59
	Grammar	16							60-62
	Creative writing	17							63-65
	Study skills	18							66-68
	Other	19							69-71
	TOTAL TIME (minutes)								72-74

78-79 TL

GLOSSARY

Grade 2 Mathematics

1. Addition/Subtraction no Regrouping - Standard Short Form

Learning the basic addition and subtraction facts. Finding the sum or difference of problems which do not require the renaming of 10 ones as 1 ten or 1 ten as 10 ones (i.e. no "carrying" or "borrowing").

Includes:

A. Basic facts: Basic addition facts are the sums of two single digit addends up through 9 + 9. The basic subtraction facts are the inverses of the addition facts and therefore include facts up through 18-9.

B. Non regrouping problems in addition: Sums of a single digit and a multiple digit addend or two or more multiple digit addends which do not require the renaming of 10 ones as 1 ten.

10	23	547
+ 5	+ 46	+ 201

Includes column addition without regrouping.

6	20	21
4	30	13
+ 5	+ 10	+ 15

C. Non-regrouping problems in subtraction: Finding the difference between a single digit and a multiple digit number or the difference between two multiple digit numbers which do not require the renaming of 1 ten as 10 ones.

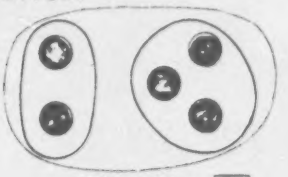
27	48	532
- 7	- 14	- 420

Note: Problems in this category can be presented in a variety of formats.

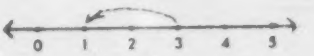
The problem may be laid out horizontally or vertically:

2	3		
+ 3	- 2	2 + 3 = ___	3 - 2 = ___

Pictorial representation may be used to help the students understand the basic processes of joining or separating sets and/or as an aid in carrying out the computation involved:



2 + 3 = ☐



3 - 2 = ☐

In all of the examples above, the primary task is to find the sum or difference between two numbers when both of those numbers as well as the applicable operational sign are given.

However, there are situations where instructional algorithms or processes involving place value concepts are used in the teaching of these same computational skills and when this occurs the instruction should be coded under category #2 (see section #2).

There are other situations which require more than the straightforward computation of a sum of difference (but do not involve place value) and these situations are discussed in the Computational Transfer Section (#7).

2. Addition/Subtraction no Regrouping- Instuctional Algorithms With Place Value Transformations:

In our base 10 number system the understanding of place value is essential to the learning of computational skills. With this in mind, curriculum materials often include instructional algorithms or processes which combine place value concepts along with practice in computation. These processes may involve expanded notation or the designation of tens and ones. Some common (depending on text) instructional algorithms are:

$$\begin{array}{r} 14 = 10 + 4 \\ +\ 14 = 10 + 4 \\ \hline 20 + 8 = 28 \end{array}$$

(Use of Expanded Notation)

$$\begin{array}{r} \text{TENS} \mid \text{ONES} \\ 14 = \quad 1 \mid 4 \\ +\ 14 = \quad 1 \mid 4 \\ \hline \quad 2 \quad 8 \end{array}$$

(Designation of ten's and one's place)

$$\begin{array}{r} 14 \\ +\ 14 \\ \hline 8 \\ 20 \\ \hline 28 \end{array}$$

(Long form with partial addends)

3 tens 2 ones + 2 tens 5 ones = 5 tens ☐ ones

☐ + ☐ = ☐

3. Addition/Subtraction with Regrouping - Standard Short Form

Addition problems which require the renaming of 10 ones as 1 ten ("carrying") and subtraction problems which require the renaming of 1 ten as 10 ones ("borrowing"). Here we want to include only the regrouping problems which are presented in the standard computational algorithmic format, also known as the short form.

$27 + 3 = \square$

$$\begin{array}{r} 18 \\ +\ 14 \\ \hline 32 \end{array} \qquad \begin{array}{r} 13 \\ 15 \\ +\ 16 \\ \hline 44 \end{array} \qquad \begin{array}{r} 26 \\ -\ 9 \\ \hline 17 \end{array} \qquad \begin{array}{r} 40 \\ -\ 15 \\ \hline 25 \end{array}$$

This category is parallel to category #1 in that the student is given two numbers and told to find their sum or difference but in this case the problems also require regrouping. The general guidelines on format in category #1 also apply to this category.

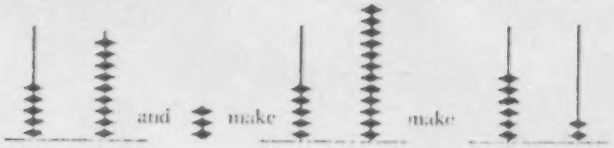
4. Addition/Subtraction with Regrouping - Instructional Algorithms With Place Value Transformations:

Regrouping problems in a format which includes place value concepts. Here the instructional algorithms help explain the regrouping processes which underlies the "carrying" and "borrowing" techniques used in the standard short form.

Examples:

$$\begin{array}{r} 16 = 10 + 6 \\ +\ 14 = 10 + 4 \\ \hline 20 + 10 = 30 \end{array} \qquad \begin{array}{r} 16 \\ +\ 14 \\ \hline 10 \\ 20 \\ \hline 30 \end{array}$$

$$\begin{array}{r} 16 \\ +\ 14 \end{array} \qquad \begin{array}{c|c} \text{TENS} & \text{ONES} \\ \hline 1 & 6 \\ 1 & 4 \\ \hline 3 & 0 \end{array}$$



5 tens 9 ones + 3 ones = 5 tens + 12 ones = ☐ tens ☐ ones.

59 + 3 = ☐ + ☐ = ☐

$$\begin{array}{r} 32 = \\ -\ 16 = \end{array} \quad \begin{array}{r} 30 + 2 = \\ -10 - 6 = \end{array} \quad \begin{array}{r} 20 + 12 \\ -10 - 6 \\ \hline 10 + 6 = 16 \end{array}$$

$$\begin{array}{r} 32 = \\ -\ 16 = \end{array} \quad \begin{array}{r} 20 + 12 \\ -10 - 6 \\ \hline 10 + 6 = 16 \end{array}$$

5. Speed tests - Timed speed tests in addition and subtraction. May also include speeded flash card drill which is specifically aimed at increasing automaticity. Code ACTUAL TIME ONLY. That is for a one minute speed test code 1 minute to speed tests. Code any time in preparation, scoring or collecting tests to other computation (#6).

6. Other Computation - Computation not covered by codes 1 through 5, such as multiplication, division, or time in category #5 exclusive of actual speed test time. Please include descriptive note when coding time to this category.

7. Computational Transfer - Tasks which require the student to recognize and apply some of the operational concepts and patterns within our number system. The student must understand and use the operations which underlie computation, but in a format which involves more than straight-forward computation. Includes:

A. Properties:

1. Commutative property of addition and multiplication

$3 + 2 = 2 + 3$

$2 \times 3 = 3 \times 2$

2. Associative (grouping) property of addition.

$2 + (3+5) = (2+3) + 5$

3. Properties of zero.

Identity element of addition: $18 + 0 = 18$
Inverse relationship in subtraction: $18 - 18 = 0$

B. Number Patterns: Tasks which promote the student's search for and recognition of the various patterns which can be found among numbers.

Examples:

1. Counting by 2's (odd and even numbers).
2. Counting by 5's, 10's, 20's, etc.
3. Functions - discovering or applying a function rule like add 3, subtract 2, etc.

   a. Rule is given:

+	2	5	7	9
4	6			

   b. Student must discover and apply the rule to complete the pattern.

1	3	8	4
4	6	11	?

7, 5, 3, ?

{(1,2), (2,4), (3,6), (4,?)}

C. Missing Addends - Open sentences: Number sentences in which the sum or difference is given and one of the addends or numbers is unknown.

Examples:

$$\begin{array}{r} \square \\ +\ 3 \\ \hline 7 \end{array} \qquad \begin{array}{r} 4 \\ +\ \square \\ \hline 7 \end{array} \qquad \square - 5 = 5 \qquad 5 - \square = 2$$

$$\begin{array}{r} \square \\ -\ 3 \\ \hline 4 \end{array} \qquad \begin{array}{r} 7 \\ -\ \square \\ \hline 3 \end{array} \qquad \square + 6 = 10 \qquad 4 + \square = 10$$

D. Number Sentences With Equalities and Inequalities - Includes only those number sentences that involve computation plus the use of >, <, =, +, -.

$7 - 6 \lessdot 1 + 3$ $\qquad$ $7 \triangle 2 = 5$

$7 \gtrdot 4 - 3$ $\qquad$ $8 \overset{+}{\triangle} 3 = 11$

$10 + 10 \overset{=}{\bigcirc} 15 + 5$

This category does not include the use of inequality signs in numerical comparisons. i.e.

27 (>) 26
127 (>) 126
} This should be coded as #8 numerals

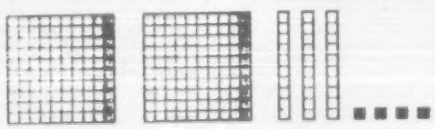
8. Place Value/Numerals - Place value involves the concept that a digit has three meanings: It's face value (the meaning it has wherever it is used), it's place value (the meaning it takes from it's place in a numeral), and it's total value (which is the product of the first two values). In the numeral 45, the 4 has a face value of four, a place value of ten, and a total value of forty. Teaching place value will involve expanded and compact notation, identification of the one's, ten's, or hundred's place, and naming the number of tens (or ones, etc) in a numeral.

Numerals includes understanding the order of the counting numbers and evaluating the sequential position of one numeral in relation to another. Comparing and evaluating numerals will involve place value concepts.

Examples:

A. Place Value:

1. How many tens in 75?
2. Which number is in the one's place?
3. 6 tens and 2 ones = 60 + 2 = 62
4. 155 = 100 + 50 + 5
5. Use of manipulatives or pictures to teach numerical structures.



2 hundreds, 3 tens, and 4

We write 234.

B. Numerals:

1. Writing the missing numerals.

46		49	

2. What number comes before, after, or between?
3. Using inequalities: 145 > 135.
4. Comparing sets of objects. e.g.

Put an X through the smallest set.

9. Word Problems - Solving simple word problems (usually one-step) involving addition, subtraction, the joining or partitioning of sets, time, and money.

10. Money - Identifying coins, the sum of a set of coins, and equivalent values of coins. Using coins for practice in addition, subtraction, and understanding the decimal system.

11. Linear Measurement - Measuring the length, width, or height of objects, lines, or pictures.

12. Fractions - Recognizing and identifying a fractional part of a set, region, or line.

Examples:

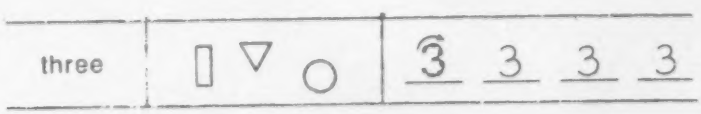
a. Draw a ring around 1/3 of the trees.

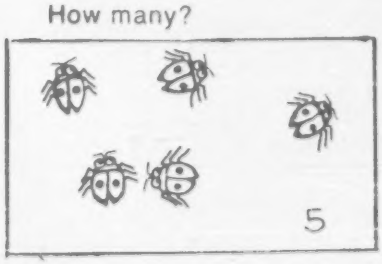
b. What part of this region is shaded?

13. Developmental Activities - Activities which do not involve computation but do promote the development of concepts which are considered preliminary to the understanding and use of operational concepts. Includes:

A. Review of basic number concepts such as learning the number name for a set of objects less than 10, learning to count and write the numbers from 0 to 10, one to one matching and recognition of equivalent sets.

Examples:





B. Activities which provide experiences (most often with concrete materials) in recognizing likenesses and differences, sorting, ordering, comparing, and matching.

Examples: Attribute blocks or games
Pattern blocks
Tangrams
Geoboards
Geoblocks
Soma cube puzzles

14. Other Concepts - Curriculum objectives involving mathematical concepts or application not covered in codes 7 through 13. Please include descriptive note when coding thime to this category.

Examples: Ordinals (first, second, third, etc.)
Geometry - figures, lines, points
Nonlinear Measurement - liquid, weight, time

GLOSSARY

Grade 2 Reading

I. DECODING - Learning letter-sound correspondences

A number of different tasks can be used in exercises aimed at teaching decoding; for example:

a. The child could be asked to give the sound associated with a particular letter or group of letters.

b. The child could be asked to read words with a common sound or with a rhyming pattern.

c. The child could be asked to recognize or identify a word containing a particular sound.

d. The child could be asked to write words with a particular sound. (Spelling or dictation are decoding tasks when they focus on a particular spelling pattern.)

e. The child could be asked to match words containing the same sound.

f. The child could be asked to locate all the words in a list or story which have a particular sound or spelling pattern.

g. Even fill-in-the-blank exercise can be decoding, if the choice the student must make depends on and teaches accurate decoding.

For example:

Mary put the _____ around the package.

sting
bring
string

What these tasks (and others not listed) have in common is that they pair particular letters or groups of letters with particular sounds and they teacher students to make the association.

Note: Sometimes, particularly in some basal reader programs, students will read single words where the lesson does not focus on a particular spelling-sound correspondence. This would be coded as Sight Words (category 17). See that category for further discussion.

In recording time in decoding, we ask you to identify the type of letter/sound being learned.

1. Single consonants

Single consonants located in any position in a syllable.

Examples: /t/ in tan, bat, ate

2. Consonant blends and digraphs

Common combinations of consonants, located in any position in a syllable.

Examples: Blends include st, tr, fl, cr, sp, spr, thr, nd, etc. as in flower, spread, sand

Digraphs include sh, ch, th, wh as in where, thin, wash.

3. Variant consonants (c or g)

Most consonants have one dominant letter-sound correspondence. Some consonants are variable; they have 2 common patterns.

Examples: cat vs. city; goat vs. gentle

Tasks: To fall in this category, teaching tasks should compare and contrast the two decodings of the same letter. The student might have to decide which sound was appropriate in a particular word, or with a particular vowel following the consonant (ca, vs. ci).

4. Short vowels

Regular short vowel sounds of a, e, i, o, u.

Examples: bat, red, sick, pond, fun

5. Long vowels

Regular long vowel sounds of a, e, i, o, u.
Two major types of spelling patterns produce these sounds - final e and digraphs.

Examples: bake; rain
these; mean, feet
fine,
pole; boat
huge;

6. Other decoding

Besides the basic categories above, other specific decoding patterns might be taught.

Examples: Complex vowel combinations such as dipthongs (oi, ou, oo, aw, etc.)
Sounds of "y" as a vowel (as in cry, candy)
Effects of consonant context on vowel decoding (vowels followed by "r," as in cart or fair; vowels followed by "l," as in tall)
Silent consonants (know, ghost)
Etc.

II. WORD STRUCTURE - Analysis and meaning of word parts

7. Compound words

Two meaningful words are combined to form a new word, which takes its meaning from the parts.

Examples: mailbox, goldfish

Tasks: Students might be asked to identify the parts, combine parts to create new words, or identify words which are compounds.

8. Root words and affixes

Prefixes and/or suffixes are added to a root word.

Examples: Grammatical endings like -s, -ed, -ing
Suffixes like -ly, -ful, -less, -y, -er
Prefixes like re-, un-

play, played, playful, replay

(Includes spelling changes like doubling the consonant, dropping the final e, or changing y to i. Also includes irregular forms like go, goes, went, gone, going.)

Tasks: Students might have to identify root words, identify affixes in words, or add affixes to words. Includes work on the meaning of affixes and on the correct use of word forms. (John is _____ up the street.)
walk/walked/walking

9. Syllables

Conventional or sound-based units rather than meaningful units.

Examples: window = win dow (2 syllables)

Tasks: Identifying first syllable, last syllable, all syllables, or number of syllables.

III. WORD MEANING - Understanding the meaning of a specific word or phrase

10. Synonyms

Two words which mean about the same thing.

Examples: little = small; everyone = all

Tasks: Students might be asked to name a word that means the same thing as another word. Or students might be asked to match words that are synonyms.

11. Pronoun reference

The meaning of a pronoun comes from the noun to which it refers.

Examples: Lisa tried to open the window.
It was stuck.
(What does "it" mean? window)

Tasks: The student might be asked to identify the noun a pronoun refers to (as above). Or the student might be asked to fill in the appropriate pronoun for an incomplete sentence. (John handed the teacher _____ homework paper.)
his/her/its

12. Other word meaning

Meanings of words alone or in the context of a sentence.

Examples: Definitions (a city is a big place with lots of people and buildings in it).

Defining words from context (using the meaning of a sentence to figure out the meaning of an unfamiliar word or a word with multiple meanings).

Using a particular word in a sentence (writing a sentence that shows the meaning of a new vocabulary word).

Antonyms (words opposite in meaning).

Classification of words (apples, oranges, and peaches are fruit).

Tasks: The student might be asked to give the meaning of a word, match a word with its definition, or write a sentence using a particular word.

IV. COMPREHENSION - Understanding of ideas expressed in written material

The story below will be referred to in the examples of the comprehension categories. Time spent reading the story would be coded in Reading Practice. Time spent answering questions would be coded in Comprehension.

Oh, how Peter wished he could whistle! Peter saw his friend Sam playing with a dog. Whenever Sam whistled, the dog ran straight to him. Peter wished he could do that trick with his own dog, Willie. Peter tried and tried to whistle, but he just couldn't.

Peter went into his house and put on his father's old hat, to make himself feel more grown-up. He looked into the mirror to practice whistling. Still no whistle!

The next day Peter went outside to play. He sat on the front steps and tried to whistle. Then Peter saw his dog coming. Quick as a wink, Peter hid behind the stairs. He

wanted to surprise Willie with a whistle. Peter puffed up his cheeks. He blew and blew and blew. Suddenly, out came a real whistle. Willie stopped and looked around to see who was making the noise.

"It's me," Peter shouted. He jumped out from behind the stairs. Willie raced straight up to him. Peter was delighted.

13. Understanding events

Understanding and remembering what happened in a story, including actions, characters, descriptions, and settings.

Examples: What did Peter want to do? (whistle)
Who came running when Sam whistled? (his dog)
Where did Peter hide? (behind his front steps)
How did Peter feel when Willie raced up to him? (happy)

14. Understanding relationships

Understanding and remembering temporal sequences or cause and effect relationships.

Examples: Putting events in order: What happened first?

a. Peter hid behind the stairs.
b. Peter saw Sam whistle.
c. Peter whistled to call Willie.
d. Peter looked in the mirror and tried to whistle.

Why did Peter put on his father's hat? (to feel grown up)
Why did Peter hide? (so he could surprise Willie)

15. Identifying main ideas

Recognizing the topic of a passage, what the story is all about. Identifying and understanding the central or most important ideas that are being communicated.

Examples: What is this story mainly about?

a. how to train your dog
b. a boy and his dog
c. playing tricks on people
d. Peter learns to whistle

What lesson could you learn from this story?
(keep trying and you'll succeed)

16. Other comprehension

The comprehension categories above refer primarily to the student's understanding of a story he reads. Other types of comprehension of verbal material could also occur. Or sometimes a discussion about

the meaning of a story might mix the three types of comprehension so thoroughly that it would be impossible to separate the time. If a comprehension activity does not fall in any of the more specific categories, code it as "other."

Examples: Following directions

Application of reading skills to real-world materials like signs, menus, TV schedules, etc.

Ordering words to express a complete thought

(to camp Helen went for a week)
= Helen went to camp for a week.

Having a student retell a story in his own words, if the retelling includes events, relationships, and main ideas.

Picture interpretation to aid comprehension. ("Look at the picture. What do you think the story is going to be about?")

V. READING PRACTICE - Practice in reading

Note: All reading activities involve the act of reading. Use these Practice categories only for activities where students spend time just reading. We will automatically assume that time in specific skills (decoding, word structure, word meaning, or comprehension) includes some reading practice as well.

17. Sight words

General practice at reading single words. No particular decoding focus. Students must integrate a variety of decoding skills in order to read a word on sight.

Tasks: Students read these words at the beginning of a lesson:

slippers bought hurry etc.

Teacher reads a word and the students must circle it:

(watch) was what

liver lives (silver)

Any word reading task where there is no intent to practice specific decoding patterns.

18. Oral reading of text

Individual or choral reading of stories by students.

Tasks: Reading circle where students take turns reading aloud from a story.

19. Silent reading of text

The student reads a story to himself.

Tasks: Students have time for independent reading. Each student reads to himself. Students might go to the library and read. A student might read when he finishes other work early.

20. Reading in content areas

Reading science or social studies material (oral or silent)

Tasks: The students read silently in the social studies book. The students take turns reading aloud from the Weekly Reader.

21. Listening while reading

The student listens while he reads in an accompanying text.

Tasks: The student must be simultaneously reading and listening. He could be listening to a tape or record of a story and reading along. Includes music if the student is both reading and singing.

IV. READING RELATED - Language arts and study skills

22. Spelling

Writing words or sentences dictated by the teacher. No particular decoding focus.

Tasks: The teacher reads a word or sentence and the students write it. There is no intent to practice specific decoding patterns, just a general collection of words.

23. Grammar

Understanding sentence structure and grammatical form.

Examples: Capitalization, punctuation, parts of speech

Tasks: Many possible activities involving grammatical concepts.

24. Creative writing

Students make up their own stories and write them.

Tasks: The teacher might have all students write a story about summer vacation. Or students might write their own endings to a story they have been reading.

25. Study skills

Learning and using skills that help the student acquire knowledge through reading.

Examples: Dictionary skills, alphabetization, table of contents, using the index, using the encyclopedia, card catalog, finding books in the library

26. Other

Other activities which are related to reading and learning to read.

Examples: Copying, where the student directly copies letters, words, or sentences. Includes penmanship exercises.

Developmental activities like visual or auditory discrimination.

The teacher reading a story to the class to promote interest in reading.

Students listening to a tape without reading along.

CONTEXT CLUES--A COMMON FORMAT

A common response format in workbook pages, especially at grade 2, is to ask the student to fill in the blank to complete a sentence. To perform the task the student must read the sentence parts that are given and understand their meaning in order to recognize the element that would complete the thought. He must use the context as a set of clues which define the nature of the missing piece. Understanding the sentence framework is a comprehension process. But the task also involves selecting the best word(s) to fill the blank, and the nature of the choices is critical. To code the content of items in a context clues format, consider the distinctions the child must make in order to select the correct alternative.

The examples below show some of the different ways a context clues format can be used:

Decoding:

Jane ate a red candy _____.
cane / can

Here the student must not only understand the sentence but also know the role of final e in decoding vowels. Without this knowledge of decoding patterns, the child might know the word he wants to fill the blank but still select the wrong alternative. The purpose of the exercise is to practice decoding rules. This exercise would be coded as Long Vowel Decoding (category #5).

Word Structure:

Tim went _____ down the street.
skip
skips
skipping

This exercise teaches correct use of grammatical endings; coded as category #8.

Word Meaning:

Susan ran to her house. Then _____ went inside.
she
he
it

Coded as Pronoun Reference (category #11).

Some animals have snouts. They are really long _____.
ears
mouths
noses

Because the ocean roars, we need to _____ to be heard.

talk
shout
whisper

In the two examples above, the emphasis is on the meaning of the missing word. The student must consider the semantic distinctions among the choices in order to select the word with the best meaning to complete the sentence. Coded as Other Word Meaning (category #12).

Choose from these words to complete the sentence below:

lazy dozing buzzed dizzy grazing

Soon, a bee _____ around the colt's head.

In this example the word choices all have the letter "z". But this decoding element is a constant factor; students don't have to focus on the decoding in order to complete the sentence. Sentence completion focuses on selecting the word with the best meaning. This would be coded as Other Word Meaning (category #12). (Note: Time spent reading the word choices and talking about the sound of the letter "z" in these words would be coded as Single Consonants, category #3.)

Comprehension:

After reading the story of the Little Red Hen, the student must complete this sentence:

The fox lived in a house made of _____.

straw
wood
stones

The purpose of questions like this is to check story comprehension; the correct answer depends on having read the story. This question assesses understanding of event detail (category #13).

Sight Words:

Goats like to eat _____.

green
grass
great

Like the example under Decoding, this example emphasizes careful word reading to select the correct alternative. But it does not focus on any one pattern or decoding rule; it requires integration of a number of aspects of decoding. It is therefore coded as Sight Words (category #17).

GLOSSARY

Grade 5 Mathematics

1. Addition: Addition of whole numbers with or without regrouping. Includes addition speed tests.

2. Subtraction: Subtraction of whole numbers with or without regrouping. Includes speed tests in subtraction.

3. Multiplication - Basic Facts: Multiplication with two 1-digit factors. Also known as times table up through 9 X 9.

4. Multiplication - Speed Tests: Timed tests in the basic multiplication facts. May also include speeded flash card drill which is specifically aimed at increasing automaticity. Code ACTUAL TIME ONLY. That is, for a one minute speed test, code 1 minute to speed tests. Code any time in preparation, scoring, or collecting tests to other computation (#8).

5. Multiplication-Algorithm: Multiplication with one factor of two or more digits, i.e., all multiplication above the basic facts.

6. Division: Division of whole numbers. All levels of difficulty. Includes speed tests in division.

7. Fractions: Computation with fractions including the recognition and identification of equivalent fraction. Does not include identifying the fractional part of a set or region (this should be coded as #16 - other concepts).

8. Other Computation: Computation not covered by codes 1 through 7. Please include descriptive note.

   Examples:

   A. Decimals (addition, subtraction, multiplication or division of),
   B. Computation in a base other than 10.
   C. Time in Category #4 exclusive of actual speed test time.
   D. Computing averages.

9. Computational Transfer:

   Tasks which require the student to understand and use the operations which underlie computation, but in a format which involves more than straightforward computation. Focus here is on the patterns and properties of our number system. Includes:

A. Factors and Multiples: The study of common and least common multiples, common factors, sets of factors, prime numbers, and prime factorization.

Examples:

1. $6 \times \square = 42$

2. $12 = 2 \times 2 \times 3$

3. Name the multiples of 2, less than 20.

B. Number Patterns: Includes sequences, "magic squares," and functions (set of ordered pairs with a rule).

Examples:

$\{(1,2), (2,4), (3,6), (4,?)\}$

Y	4	16	28	36
Z	1	4	?	9

C. Properties: Includes the associative property of addition and multiplication, the commutative property of addition and multiplication, the distributive property of multiplication and division, identity elements, the properties of zero, and the inverse relation between addition and subtraction and multiplication and division.

Examples: Distributive property

$$(7 + 5) \times 6 = (7 \times 6) + (5 \times 6)$$

$$6 \times (7 + 5) = (6 \times 7) + (6 \times 5)$$

$$(12 + 6) \div 3 = (12 \div 3) + (6 \div 3)$$

10. Numerals/Place Value (whole numbers): Practice in reading numerals up through millions. Understanding the use of commas to set off the periods. Understanding that each digit has three meanings: it's face value (the meaning it has wherever it is used), it's place value (the meaning it takes from it's place in a numeral), and it's total value (the product of the first two values). Therefore, the 6 in 6,042 has a face value of 6, a place value of 1,000, and a total value of 6,000.

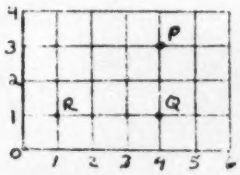
11. Word Problems: All types of word problems including word problems with graphs. The coding of word problems is given priority over the specific computation required by the problems. Therefore, regardless of the computation, time on word problems is coded under word problems.

12. Geometry - Perimeter: Computing the perimeter of a polygon using standard or arbitrary units of measure.

13. Geometry - Area: Computing the area of a polygon using standard or arbitrary units of measure.

14. Geometry - Number Pairs: Identifying number pairs on a number plane.

Example:



What is the number pair for point Q?

15. Geometry - Lines or Figures:

Recognizing and identifying common lines and plane figures. Includes angles, parallel and perpendicular lines, parallelograms, rectangles, squares, and right triangles. Does not include work with solid figures like spheres, rectangular prisms, etc.

16. Other Concepts: Other concepts and applications not covered by codes 9 through 15.

Examples:

Volume
Solid figures
Liquid or weight measures
Statistics and probability
Constructing line and bar graphs
Set theory, set diagrams, logic
Place value with decimals
Exponents (concepts of)
Averages (concepts of)

GLOSSARY

Grade 5 Reading

I. WORD STRUCTURE - Analysis and meaning of word parts

1. Root words and affixes

Prefixes and/or suffixes added to a root word

Examples: suffixes like -ly, -ful, -less, -able, -er, -est, -tion, etc.

prefixes like un-, re-, mis-, trans-, pre-, ex-, in-, etc.

grammatical endings like -s, -ed, -ing

Tasks: Students might have to identify root words, identify affixes in words, or add affixes to root words. Includes work on the meaning of prefixes, suffixes, and root words. The student might have to decide which prefix or suffix was needed to create a particular meaning, or the student might have to figure out the meaning of a word from the meaning of the parts. Also includes work on using the correct form of a word in the context of a sentence.

2. Syllables

Conventional or sound-based units rather than meaningful units.

Examples: demonstration = dem on stra' tion (4 syllables)

Tasks: Students might have to identify the first or last syllable in a word, or break a word into syllables, or determine the number of syllables in a word. Includes work on locating the accent or stress in a word.

II. WORD MEANING - Understanding the meaning of a specific word or phrase

3. Synonyms

Two words which mean about the same thing

Examples: vibrating ship = shaking ship
discover a cave = find a cave

Tasks: Students might be asked to name a word that means the same thing as another word. Or students might be asked to match words that are synonyms.

4. Pronoun reference

The meaning of a pronoun comes from the noun to which it refers

Examples: Lisa tried to open the window.
It was stuck.
(What does "it" mean? window)

Tasks: The student might be asked to identify the noun a pronoun refers to (as above). Or the student might be asked to fill in the appropriate pronoun for an incomplete sentence. (John handed the teacher _____ homework paper.)
his/her/its

5. Other word meaning

Meanings of words alone or in the context of a sentence

Examples: Definitions, including using dictionary entries to define words

Defining words from context (using the meaning of a sentence to figure out the meaning of an unfamiliar word or a word with multiple meanings)

John used the term "habeas corpus" in his speech about law.

term means

A. a period of time
B. an assigned time to serve
C. a word with an exact meaning
D. a condition or requirement

Using words in sentences (writing a sentence that shows the meaning of a new vocabulary word)

Antonyms (words opposite in meaning)

Figurative Language (recognizing the meaning of a word or phrase used in a nonliteral sense, including simile, metaphor, and idiomatic expressions)

"John laughed his head off."
means "John laughed a lot."

Crossword Puzzles

Tasks: The student might be asked to give the meaning of a word, match a word with its definition, or write a sentence using a word.

III. COMPREHENSION - Understanding of ideas expressed in written material, including understanding of literature and understanding of written material in the content areas (science and social studies).

The story below will be referred to in the examples of the comprehension categories. Time spent reading the story would be coded in Reading Practice. Time spent answering questions, writing about, or discussing the story would be coded in Comprehension.

Saving the Seals

Who owns the sea? The ships of all countries sail the open seas. Not long ago, all countries could fish and hunt in the ocean as they pleased. Now, the countries using the sea must work together to protect the sea's animal life.

In 1870, there were millions of valuable fur seals in the Bering Sea. Ships came from all parts of the world to kill them. Men wanted the animals' fur and the oil from their bodies. By 1910, only about 130,000 seals were left. Even the hunters knew that something had to be done or the seals would disappear.

Four countries owned land near the seals' northern home. In 1911, these countries began plans to control seal-hunting. The governments of Japan, Russia, Canada, and the United States agreed to kill no more seals in the open seas. Because they wanted to protect mother seals and their young, they agreed that only male seals without mates could be killed. Money earned from the skins and oil of these seals was to be divided among the four governments.

Today, large herds of seals swim in the Bering Sea again. By working together, four countries saved the seals in the sea they share.

6. Verbatim (no rephrasing)

Understanding and recall of information exactly as stated in the text.

Examples:
1. Where do large herds of seals swim today? (in the Bering Sea)
2. Which governments agreed to kill no more seals in the open sea? (Japan, Russia, Canada, U.S.)
3. Why did they agree that only male seals without mates could be killed? (to protect mother seals and their young)

7. Translation (paraphrase)

Recognizing ideas stated in different words; recall of information when ideas are restated; rephrasing of ideas in other words.

Examples:
1. Which countries joined in the agreement to limit seal killing? (Japan, Russia, Canada, U.S.)
2. Describe in your own words what the countries agreed to do.

8. Inference/Synthesis

Synthesis of information from different points in a text; understanding of ideas implied by a text; using background knowledge or experience to interpret or extend the ideas in a text; drawing conclusions or predicting outcomes

Examples:
1. Why were the seals hunted?
   a. People wanted to eat seal meat.
   b. Their fur and oil were valuable.
   c. The seals were eating all the fish.

2. The story does not say so, but it makes you think that
   a. hunters used seal oil on their bodies
   b. seals have little value for hunters
   c. all the seals might have been killed

3. What would happen if only 2 of the 4 countries joined the agreement?

9. Identifying main ideas

Recognizing the topic of a passage; identifying and understanding the central or most important ideas being communicated.

Examples:
1. On the whole, this story is about
   a. Russia and Canada
   b. protecting seals
   c. hunting in the Bering Sea

2. What message is the author trying to get across? (It is important to protect animals. Countries need to work together.)

Besides answering questions, this content category includes work on outlining a passage, or recognizing the structure and organization of a passage (superordinate and subordinate elements).

10. Evaluation of fact and opinion

Critical analysis of statements and the basis for their acceptance; identifying fact and opinion statements. Also includes evaluation of the qualifications of a speaker/writer and understanding how "loaded" words convey opinions.

Examples: Which statement is a fact rather than an opinion?

a. Seals should be protected.
b. All the seals very nearly died.
c. In 1910, only about 130,000 seals were left.

11. Other comprehension

Comprehension of written material which does not fit one of the specific categories above. Also includes situations where a comprehension activity mixes several types of comprehension so thoroughly that it would be impossible to separate the time.

Examples: Following directions

Aplication of reading skills to real-world materials like signs, menues, TV schedules, etc.

Dramatics, acting out the meaning of stories.

IV. READING PRACTICE - Practice in reading

Note: All reading activities involve the act of reading. Use these practice categories only for activities where students spend time just reading. We will automatically assume that time spent in specific skills (word structure, word meaning, or comprehension) includes some reading practice as well.

12. Oral reading

Individual or choral oral reading of stories by students

Tasks: Reading circle where students take turns reading aloud from a story.

13. Silent reading

The student reads a story to himself

Tasks: Students have time for independent reading. Each student reads to himself. Students might go to the library and read. A student might read when he finished other work early.

14. Reading in content areas

Reading science or social studies material (oral or silent).

Tasks: The students read silently in the social studies book. The students take turns reading aloud from the Weekly Reader.

V. READING RELATED - Language arts and study skills

15. Spelling

Matching word sounds with particular configurations of letters

Tasks: The teacher might read a word or sentence and have the students write it. Students might have to decide whether or not a word is spelled correctly. Includes work on homonyms (like "to", "too", "two", or "peace", "piece") and their correct use in sentences. Some lessons may focus on particular patterns in letter-sound correspondence (like sounds of the letter "y", or words with silent "e").

16. Grammar

Understanding sentence structure and grammatical form.

Examples: Capitalization, punctuation, parts of speech, diagramming sentences

Tasks: Many possible activities involving grammatical concepts.

17. Creative writing

Students make up their own stories and write them

Tasks: The teacher might have all students write a story about summer vacation. Or students might write their own endings to a story they have been reading.

18. Study skills

Learning and using skills that help the student acquire knowledge through reading.

Examples: Dictionary skills, alphabetization, table of contents, using the index, using the encyclopedia, card catalog, finding books in the library.

19. Other

Other activities which are related to reading.

Examples: Copying, where the student directly copies letters, words, or sentences. Includes penmanship.

Foreign language.

Reading maps or graphs.

The teacher reading a story to the class to promote interest in reading.